AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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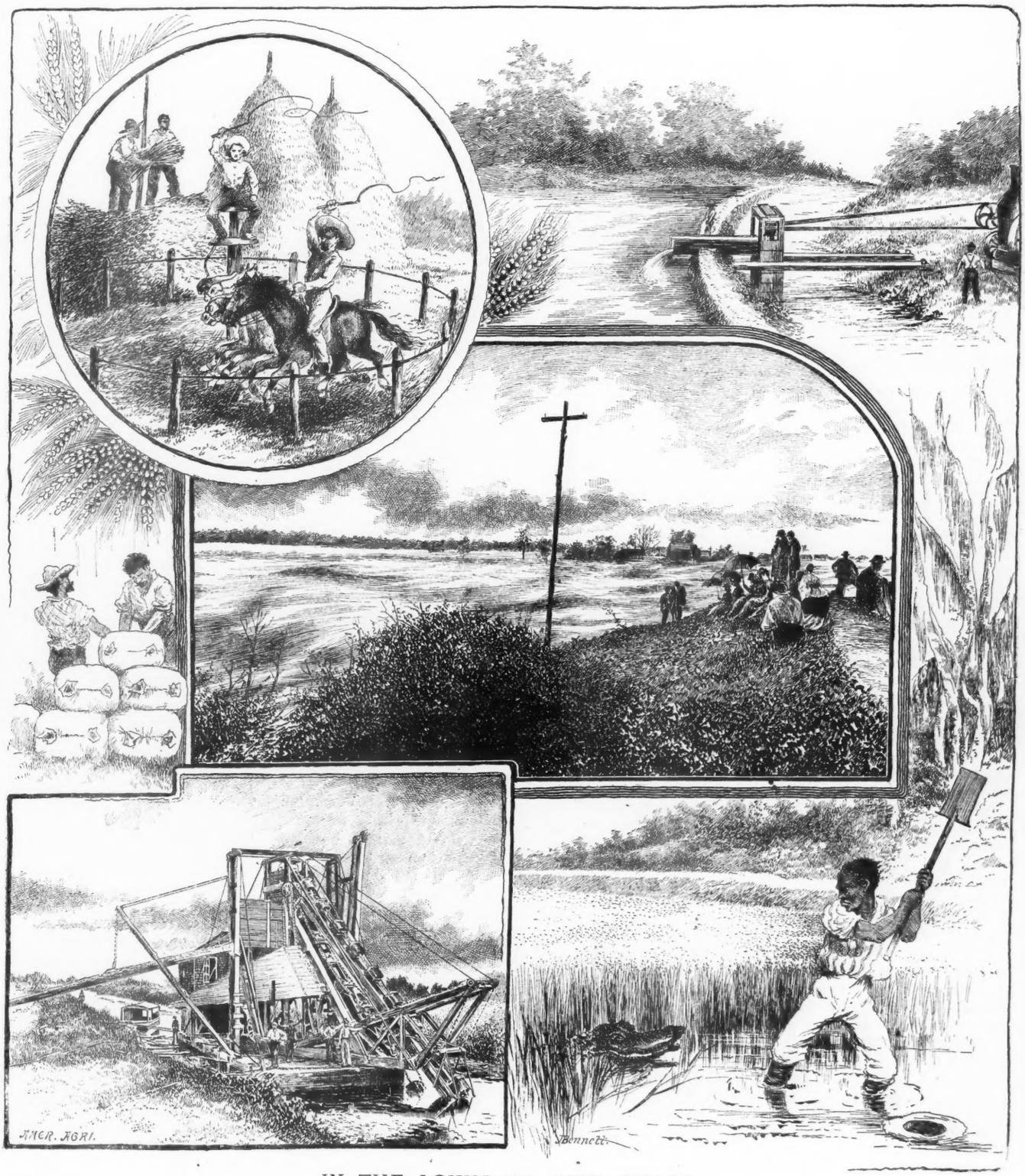

IN THE LOUISIANA RICE FIELDS.

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BREAD FROM THE WATERS.

The American Rice Industry—Its Development and Prospects.

ANDREWS WILKINSON, LOUISIANA.

RICE, not wheat, is the bread which forms the staff of life for more than half of the human race. Harvested mostly by hand, hulled by machinery, and boiled to suit the taste, with readily separating grains and not into the insipid porridge or pudding known in Northern hotels, it is consumed by many hundreds of millions in Africa, Asia, and the great island groups south and east of the latter continent. Holy Writ referred to sowing the seed of this aquatic cereal when it said: "Cast your bread upon the waters, and after many days it will come back to you." Nineteen centuries and many more ago rice was planted broadcast by the sower's hand on irrigated fields, as it is in the countries of the Orient and Occident to-day. That part of the seed which falls upon dry ground is still withered and scorched up by the sun, and much of it is still devoured by the fowls of the air before it has had time to germinate and grow. The scale on which this culture was carried on in Hindostan, Ceylon, China, and Egypt thousands of years ago is demonstrated by the ruins of immense mountain tanks, artificial lakes, aqueducts, and irrigation canals which supplied water for the rice fields of the ancients. In Japan and other overpopulous Eastern countries labor is so cheap that rice is germinated in seedbeds, then transplanted. This laborious process causes extraordinary "suckering" or "stooling" of the original stalks, and greatly increases the yield of grain. In America it would be impossible to do this with the more reasonable rate of wages paid for agricultural work.

In North America rice culture was first commenced in Colonial Louisiana. It figured little in the products of the French province, while the planter colonists wasted their fortunes and lives in vain endeavors to win wealth, raising indigo and sugar. In the first half of the present century the tidewater region of South Carolina produced nearly all the rice raised in this country. For many years it was claimed that the culture could be carried on profitably nowhere else in the United States. This claim was based on the fact that the handsome fortunes made by the rice planters of the Palmetto State proved that there was the natural home of the industry. But while the Carolina rice planters were building up their noted planting aristocracy, buying hordes of slaves, and erecting their palatial abodes on the verge of their unhealthy rice district, a little democracy of Creole yeomen were successfully and profitably producing rice in the extreme southeastern point of Louisiana. The Creole farmers of Louisiana confined their rice-planting operations to the lower part of the Parish of Plaquemines. Some of these men were limited slave-owners, but most of them plowed their lands, planted, harvested, and milled their crops with their own labor.

These Plaquemines Creoles prepared their ground with primitive plows drawn by yokes of sturdy little native oxen. They reaped their harvests with crooked hand-sickles, and stacked their grain in the straw in clusters of stacks which they call "Batteries." When ready for threshing operations they made a circle of packed ground, about the size of a circus ring, near the stacks, planted a post with a swivel-bolt in its top in the center of this circle, ran a rope from this bolt out to the rim of the circle, and to this stout rope hitched, at regular intervals, a number of tough little Creole horses. Rice sheaves were piled thickly over the packed ground, and the ponies were driven briskly round and round, impelled by much popping of rawhide whips and emphatic French patois. More sheaves were thrown in until the ponies were fagged out. The chaff was next winnowed from the trodden-out grain by hand-fans, and the rough rice was carefully stored in sacks to be afterward hulled, cleaned, and polished in horse-mills with rude shelling stones, wooden pounders and sheepskin polishers. The mills of that time were moved by the same horses that had hammered the grain from the straw with their hard little hoofs. Many of these Creole farmers grew limited orange groves on the higher lands near the Mississippi river levee, while their low back lands were devoted to rice culture; thus being not dependent on one crop alone. They were the happiest and most prosperous class of yeomen on earth. Numbers of them made independent fortunes before the war, and some of the grizzled old rice planters came to be bankers for less prosperous sugar planters.

During the decade preceding the civil war the wonderful success of the Creole rice farmers of Plaquemines Parish induced numbers of "American" sugar planters to try rice culture. Very few of these succeeded. Planters and their overseers did not like following negro field-hands knee deep in mud and water all day to see that their work was properly done. They hated the harvest work on damp and steaming fields in hot August and September weather. They preferred sugar planting, where plowing was finished before midsummer, and harvest time fell in November and December. Many of them contemptuously exclaimed: "Rice is only fit for Creoles, and Creoles are only fit for rice!" In that same decade the limited rice district of Louisiana was visited by several prospectors from the noted rice region of South Carolina. These private commissioners were much disgusted with rice culture in the Pelican State, and returned home chuck full of ridicule at the possibilities of the Louisiana lowlands for rice production. Yet some of these men have lived to see Louisiana producing annually more rice than both Carolinas, Georgia, Alabama, Mississippi, and all of the other Southern States combined. They have observed the growth of the Louisiana rice crop, during twenty-five years, from 30,000 barrels in 1860 to 1,100,000 barrels of rough rice in 1885.

The first great stimulus to rice production in the State came from the extraordinary prices for breadstuffs here prevailing during the last two years of the civil war, when the best part of Louisiana was under Federal occupation. Rough rice then went up to ten and twelve dollars a barrel. The close of the war found many of the sugar plantations entirely unstocked in seed cane and their costly machinery destroyed, while their proprietors were deprived of means to make another start in sugar culture. They turned to rice as the cheaper and speedier crop. Later a rapid decline in sugar prices set in, and a majority of the remaining sugar planters were ruined. More than half their sugar plantations were kept in cane culture under other hands, but a very large fraction were entirely devoted to rice production.

Before 1880 rice culture had extended from its former limited district in the lower part of Plaquemines Parish to the Parishes of St. Bernard, Orleans, Jefferson, St. Charles, St. John, St. James, Ascension, Iberville, East Baton Rouge, and West Baton Rouge on the Mississippi river, and to Ascension, Assumption, and Lafourche on the Bayou Lafourche. The "American" planters found that they could raise rice when driven to the business by hard necessity; they irrigated their fields by steam-pumping machinery; they drained the lowlands and plowed them dry, planted their seed with horse drills, flooding the ground as fast as it was planted. Finally, draining off the water, they commenced gathering their crops with horse harvesters and automatic binders. They threshed out the grain with steam threshers. The new class of rice-growers on their hundred- or thousand-acre plantations made, acre for acre, much less money than the Creole yeomen of the olden time. The Creoles probably cleared relatively five times as much money on their twenty- and forty-acre farms. Their rice crops were made and harvested *en famille*—that is, the members of the family worked the farm together. But in the new regime the ancient yeomen had to abandon their pony-threshing "batteries" and horse-mills, and adopt more progressive steam.

Since 1885 rice has been surrendering back to sugar much of its usurped domain on the banks of the Mississippi river and Bayou Lafourche. In those localities, in many instances, enough money has been made off rice planting to enable the planters to return to the more costly and much more productive cane culture. The reduction of the rice acreage in the River and Bayou Parishes accounts for the falling off from the eleven-hundred-thousand-barrel crop of 1885 to an annual average of about eight hundred thousand barrels for the four years up to 1890. During the past three or four years rice culture has been moving steadily from the southeastern Delta Parishes to the southwestern Prairie Parishes of the State. These latter are Acadia, St. Landry, St. Martin, Lafayette, Vermillion, and Calcasieu. Three years ago the Prairie region produced practically no rice for market. In 1889 the production suddenly rose to 300,000 barrels against 477,000 barrels for the Delta Parishes, which had made 1,100,000 barrels in 1885. In 1890 the crop of the Prairie Parishes is estimated at 700,000 barrels, or about seven-tenths of the whole crop of the State.

It is ardently hoped that the entire culture may be moved over to the Prairie region. Piercing the levees of the Mississippi river and Bayou Lafourche with irrigating rice flumes has, during the past seven years, cost Louisiana in damages many times the value

of its total annual rice crop. In 1884 the Davis crevasse, in the Parish of St. Charles, from a defective rice flume in the levee, inundated seven Parishes, equal in area to the entire State of Connecticut, overflowed two manufacturing suburbs of New Orleans, and stopped for five months commerce and travel on two lines of railroad reaching from that city to the Pacific ocean. The damage it inflicted is calculated in costs at ten million dollars. In 1890 the Nita crevasse, in St. James Parish, due to a defective rice flume, flooded several rich sugar parishes, closed up temporarily the southern ends of the Illinois Central and Mississippi Valley railways, and, sending a vast volume of water into the Gulf of Mexico through Lake Pontchartrain, destroyed the immense oyster beds of Mississippi Sound. Its gross damage in money has been computed at six million dollars. On March 17, this year, the Ames crevasse, in Jefferson Parish, opposite New Orleans, broke through the levee where it was lately pierced for an iron pipe to irrigate a rice field. This crevasse, now twelve hundred feet wide, has already overflowed several Parishes, and the thriving manufacturing towns of Gretna and Gouldsboro. It threatens hourly to inundate the populous suburb, Algiers, and has cut in two the Southern Pacific and Texas Pacific railways. The extent of its damage is already measured by millions.

There is thus a yearning desire to see rice culture relegated to the Prairie parishes, where there are no levees to break, and no devastating floods to turn loose through flume-pierced embankments holding a mighty wall of rushing waters high above the fields and homes of the people. Ten years ago the Southwestern Louisiana Land Co. secured an immense tract of level land in Calcasieu Parish, and cut it up into sub tracks and divisions with powerful steam dredges. The canals and ditches thus dug divided the lands into rectangular plats, which were plowed by steam. Several years of work on a grand scale were required to get those lands drained, leveed, and in proper shape for rice cultivation, which was commenced there only three or four years ago. Some years later the Watkins Land Co., started by Kansas capitalists, was organized, and it prepared large areas of land in other Prairie parishes. In Acadia and St. Landry many enterprising Louisianians have lately improved extensive tracts of land, and gone largely into rice culture. Some of these cultivated last year plantations of from one to two thousand acres.

The new rice region in Southwestern Louisiana has had the benefit of numerous farmer immigrants from the far Northern States, and the advantage of capital liberally applied to its drainage and irrigation works. These strong companies have dredged the lowlands and constructed artificial lakes and reservoirs in the interior to furnish a continuous supply of water for the growing crops. Some of these lakes are several miles in superficial area, and five feet deep. They are formed by building high and broad embankments across low depressions in the prairies, thus holding the winter and spring rainfall for use in summer, to be fed to the rice fields through proper ditches and sluices. This is according to the ancient Oriental plan. Four years ago not a single self-binding horse-harvester was in use in that Prairie region. Last year a single shipment of forty carloads of those implements was received there from Chicago. That section of Louisiana is already the great rice field of the Western Continent. During the past ten years the Louisiana rice crop has exceeded that of the Carolinas and Georgia combined by about twenty-five per cent. Before five years have passed the new Prairie rice district is likely to surpass in production the present annual crop of all the rice-growing States. There is an immense area of land in those Prairie parishes to be profitably devoted to rice culture. The product is planted, grown, and harvested at a far less cost than on the leveed lands of the Delta parishes, and the horse-harvester can be used at far greater advantage in the Prairie parishes, where it performs the work of twelve or fifteen highly-paid harvest hands.

Rice culture in the Prairie region will, by competition, ultimately destroy the industry in the Delta district, where it is held as a menace to almost every other interest. On the Mississippi river rice-planting will drift back to its limited ancient home in the lesser part of Plaquemines Parish, where it is well below the sugar district, and crevasses can do no harm since the levees are so low toward the mouth of the river that if broken they are easily repaired. Breaks in levees ten, twelve, and fifteen feet high in the parishes above New Orleans cannot be closed in time of flood. The Davis and Nita crevasses, starting by forcing a rice flume out of the levee, grew in width and depth until they each poured 400,000 cubic feet, or 3,000,000 gallons, of water per second, over highly cultivated and populous parishes. They could either have drained or filled the famous Johnstown reservoir in a few minutes. State or national legislation will finally forbid forever endangering the levees of the Mississippi river through piercing them with the highly-destructive rice-flooding flume.

[The central picture in our frontispiece presents a vivid illustration of the crevasse at Ames plantation as it appeared on March 20 of this year. The method of threshing rice in old Creole days is seen in the upper left corner. A steam dredging boat, as used by the reclamation and navigation companies, is shown in the lower left corner, and in the upper right corner a Menge pump in operation, raising water for flooding rice fields.]

RAMIE PROSPECTS.

CHARLES H. SHINN, CALIFORNIA.

The cultivation of ramie in California has been attended with many difficulties, some inseparable from the subject, some peculiar to the region. The habit in California has been to take rapidly to any promising industry, and "push it hard"—that way fortunes were made a quarter of a century ago. In fact, the early agricultural history of California reads like a romance. Almost every new crop paid in the beginning. The first farmers in the Santa Clara Valley who grew English mustard sold the crop for six cents a pound; the next year the price was four cents, from which it fell in a few seasons more to less than one cent. By that time hundreds of acres were sown to mustard, and it was plowed under in many cases, and a late crop of corn secured.

Ramie was so widely advertised early in the seventies that the first man who secured a stand of roots established a nursery, and sold twelve thousand dollars' worth of plants in a single season. But it was soon found that there was no market for the crop, and the fond dreams of enthusiastic writers on ramie—dreams of plantations occupying the tule islands and river "bottoms" for miles—were not realized. Ten or twelve years ago there was another spurt of public interest in ramie, and again it was planted by many farmers, but no cheap method could be found for preparing the fiber, and again the crop was neglected. Experiments continued on a small but sufficient scale at the various agricultural stations, and these confirmed the general opinion that no part of the United States was better adapted to the growth of ramie on a large scale than California. Over an extensive region four and five cuttings a year are easily obtained on rich, moist lands, while a still greater area is considered safe for at least three annual harvests. Nevertheless, the high cost of labor, the difficulties of "working" the crop, and the lack of organized capital to introduce machinery on a large scale still prevent the planting of ramie.

Just now there seems to be a revival of interest in the subject, though it is as yet too soon to determine whether this is the result of the shrewd wire-pulling of impecunious speculators, who want State and Government aid, and have "ramie plants to sell"; or whether the difficult problem of cleaning the fiber is at last more nearly solved. Only time, the universal solvent of such problems, can answer this one. But it begins to look as if local capital would investigate the New Orleans and Mobile experiment in ramie machinery, and if the outlook is satisfactory there will soon be a home market for all the farmers can produce. More than this one cannot wisely say respecting ramie culture. It has enormous possibilities, but invention, skill, and capital must lead the way.

FATTENING BEEF CATTLE ON BLUEGRASS.

J. M. OSBORN.

The value of bluegrass as pasturage for beef cattle is demonstrated to a noteworthy degree on the farm of Capt. James N. Brown's Sons, in Sangamon Co., Ill. The original farm, comprising two thousand acres of rich prairie land, was bought in its primitive condition, early in the thirties, by Capt. James N. Brown, of Kentucky, an energetic stock-grower, and the importer of the first registered Shorthorns, both from Kentucky and England, into Illinois.

Upon his decease, in 1866, his three sons formed a copartnership and carried on the business, in time adding one thousand acres more to the farm. Ordinarily they carry one thousand animals, comprising eight to nine hundred grazing steers, and from one hundred to one hundred and fifty registered Shorthorns of their own breeding. The steers are bought at Chicago, or other markets, a good class of cattle always being selected, generally weighing not less than eleven hundred pounds. The process of bringing the cattle to a good marketable condition, weighing from fourteen to fif-

teen hundred pounds, is mainly done by grazing them on growing or standing bluegrass in the fields summer and winter. But in the case of snow hardening or becoming encrusted—which sometimes happens—they buy corn, hay, or straw, whichever may be most conveniently procured and fed, until a falling temperature dissipates the snow. Ordinarily it does this within a few days.

During the winters of 1889-90 and 1890-91, the amount of feed used was very light. No hay was used during 1889-90; to three hundred and fifty head a light feed of corn was given; five hundred head went through entirely on grass. During 1890-91 eight hundred and fifty head subsisted solely on grass, on which they gained from three hundred to three hundred and fifty pounds each. During ordinary winters for a series of years they have fed in the manner described from thirty to forty days, while inclement weather prevailed. It may be inquired why feed is bought in preference to producing it. Briefly, under usual conditions the natural growth of bluegrass is of greater net value than any crop they could produce. And it is to be borne in mind that there is no other crop than grass grown on the farm; it is all pastured with the exception of fifty acres of timothy meadow, the product from which is fed to the registered Shorthorns and the few horses kept, these two classes of stock being sheltered and fed during bad weather.

Under the prevailing practice the cost for labor is comparatively light. The three proprietors, with the assistance of from two to three hired men, perform all the labor that is required. Six men at most, under their system, manipulate the whole process of production, thus in reality each man farms five hundred acres. If the farm was devoted entirely to the production of grain, the expense, including wages, maintenance of men, teams, and tools, would be as many thousands of dollars as it now is hundreds. The gross income from the cattle is much less than it would be from grain, if closely cultivated, but the net income from cattle largely exceeds what it would be under the best conditions of yield and price, if wholly devoted to the production of grain. A very simple calculation would demonstrate the correctness of this assertion.

It is doubtful if the Messrs. Brown could be tempted to change long practiced methods. The vicissitudes of late years in stock-growing have not shaken their confidence in the future of cattle-growing in the Mississippi Valley. In proof of this it may be mentioned that they were lately offered by an expert and responsible cultivator one-half the crop of corn, and one dollar per acre cash rental in addition, for the use of one thousand acres of their land, which offer they declined, considering bluegrass a more profitable crop, and their own methods more desirable.

FERTILIZING WITH PLOW, HARROW, AND CULTIVATOR.

D. WEBB, MASSACHUSETTS.

In these days of commercial fertilizers and improved methods of caring for stable manure, we are likely to overlook the fact that large quantities of latent fertilizing material are ready to awake at the touch of the plow and other tools that mechanically work the soil. These machines cannot add a particle of fertility to the soil of themselves, it is true, but they can make available a large amount that could not otherwise be used as food by plants. It must be remembered that even poor soils have considerable plant food that is waiting for the action of the air and the sunlight to be made suitable for use. In a stiff soil that is unmoved from one year's end to that of another, whatever change takes place to render these valuable elements available is so slow in its action as to be hardly noticeable. It would astonish many of our farmers if they would break up a piece of worn-out sod and for one season allow it to remain idle, stirring it thoroughly every week to let in the sun, air and moisture, to see how much more luxuriant a crop it would then produce than some of their freshly-turned and freshly-manured plats.

This does not mean that such a course would be advisable, for liberal fertilizing with manure ought to accompany liberal cultivation, but it serves to prove how much more fruitful a crop can be made if better cultivation be given. The majority of farmers, so far at least as my observation shows, do not work their land enough to get the best results from it. There are at least three important reasons why the soil should have thorough and frequent stirring to bring into a usable condition the inert plant food which it contains, to kill all weeds as soon as they start, and to admit the moisture of the air below the surface, which is of benefit at almost all times, and specially important during periods of drought. It is possible to go successfully through a pretty severe dry time if the soil is kept constantly stirred around the growing plants, the secret of which is, of course, that the moist air is thus allowed to penetrate below the surface which, cooling at night, compels the air to deposit its moisture. A frequent repetition of this process not only adds large quantities of water to the soil, but probably some valuable fertilizing elements also, which this moisture has collected. The wideawake farmer will keep his crops wideawake also, by keeping his cultivators and hoes bright in working through the rows and beds, nor does he forget in early spring that he will not be likely to get too fine a seed bed for his plantings.

It is not best to depend upon the latent fertility of the soil, that Nature is constantly supplying, by which to grow our crops, but it is best to get all of this assistance that we possibly can to increase the value of the fertilizer that is made in the stable.

ONE CAUSE FOR LAME HORSES.

HOLLISTER SAGE, CONNECTICUT.

A curious mistake, common among blacksmiths, was pointed out to me recently by a practicing veterinary surgeon to whom I took a horse that had become lame gradually, with considerable heat in the feet. He drew attention to the fact that most farriers, being right-handed, unintentionally lower the left side of the foot more than the right side. As a result the pastern does not set quite evenly on the coffin bone, or the bone suspended inside the wall of the hoof, and in time the concussion of the foot on the street produces soreness in the joint which could not exist if the foot were level. A trifle out of joint, so to speak, the foot at night cannot repair the injury received or the fatigue of the day; it gradually gets feverish and then tender, and the horse is suddenly seen to limp. I have noticed this in hundreds of cases. The lameness disappears in a few days if the cause be removed by leveling up the foot carefully. A person will experience the same difficulty in his ankle if he wear for a few days a boot that is run over at the heel. The soreness will not be so pronounced for two reasons: the boot is not worn nor stood upon nights, and leather furnishes more of a cushion than iron when brought in contact with the pavement.

Neither man nor horse is permanently injured unless the faulty conditions continue. How such an error, almost unnoticeable, should be so frequently committed is easily understood when it is seen how much faster the knife removes the horn while being drawn than pushed. The shoer lifts the foot and draws the knife toward himself on the bottom of what is then the right side, but which is really the left of the hoof, as his back is toward the horse's head. To pare the left (right) side of the hoof is more difficult or unhandy and it is, as a consequence, left thicker. The horse's forefeet are so constructed that if they must turn over, to turn out is less hurtful than to turn in; hence, the first indication of lameness from this cause is usually noticeable in the right foot, the left side of that foot being the lower, thus inclining it to roll in. The lesson is, hire competent farriers and be sure to keep the horse's feet level from side to side as well as front and rear.

A SIMPLE TEST FOR LIME.

A chemical analysis will tell whether a soil has an abundance or a deficiency of lime and other materials which go toward supplying needed plant food. It requires an expert chemist to determine this, and no method has, as yet, been devised by which a farmer can analyze his own soil. But a simple method has been devised by which any farmer can tell whether his soil has enough lime or not. Take a few shovelfulls of soil from different parts of the field, and dry, pulverize and mix them thoroughly. Take a few ounces of this, powder it, and burn it to ashes on an iron shovel over a fire. Put these ashes in a glass tumbler when cooled and mix with them as much water as it will take to cover them. Stir this with a glass rod or wooden stick, but not with anything metallic. To this paste add an ounce of hydrochloric acid, which is commonly sold as muriatic acid or spirits of salts, the mixture being stirred all the time. If a pretty brisk effervescence takes place it may be taken for granted that the soil contains a fair proportion of lime; but if little or no effervescence takes place, the soil contains little or no lime.

Japan Clover.—This forage plant is gaining in favor in the South, where it has become thoroughly naturalized within a few years. When on good soil it will grow from twenty to thirty inches in height, and yield from two to three tons of hay per acre, equal in value to clover. While an annual, it nevertheless seeds so abundantly that it perpetuates itself upon ordinary soil. It starts late in spring, but grows afterward rapidly and flourishes until the frosts of autumn cut it off.

A NEGLECTED RACE OF SHEEP.

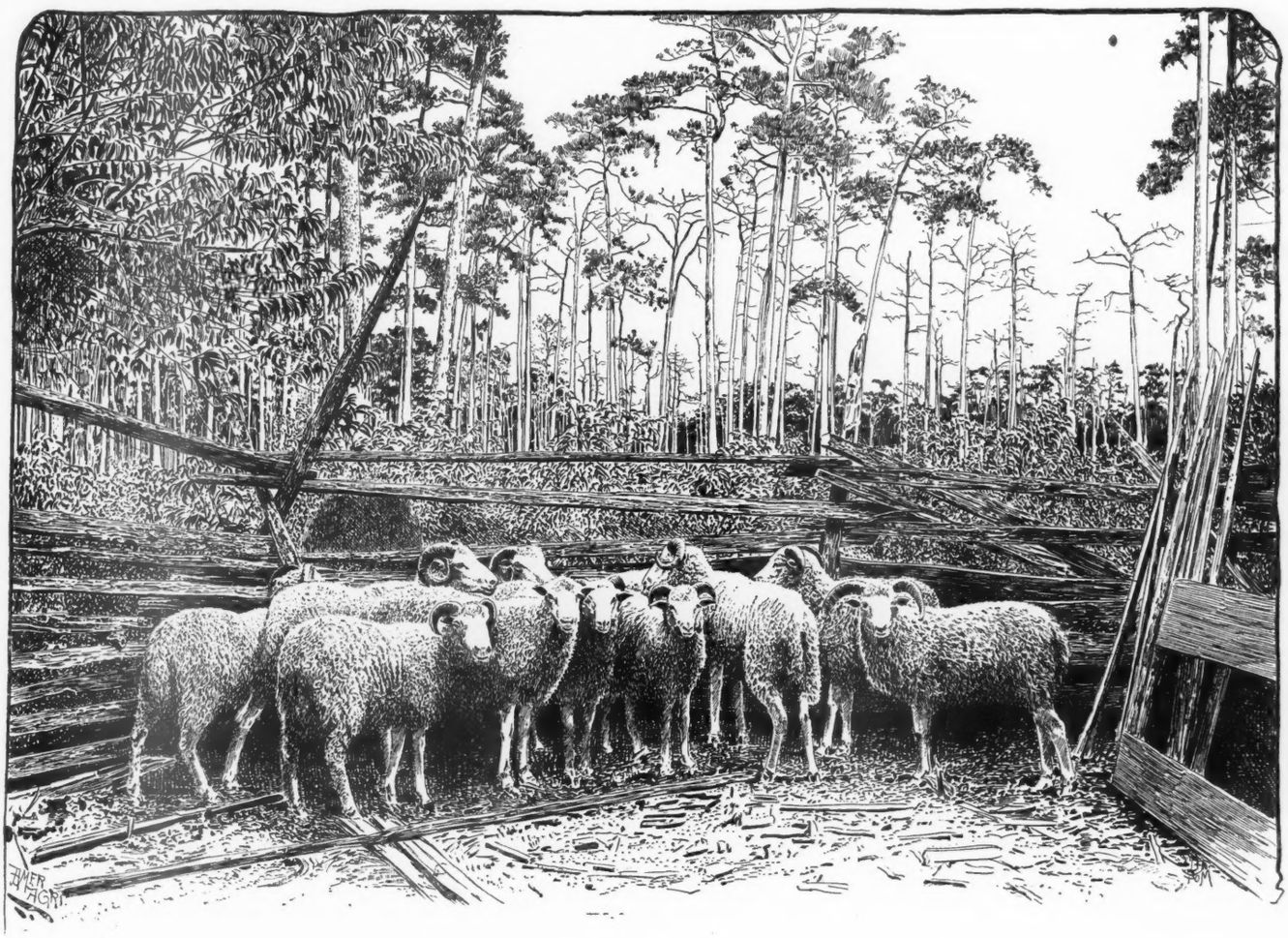
The Southern Atlantic States comprise a very admirable sheep country, with very few sheep. The region from the Potomac to the Gulf of Mexico—barring the low-lying lands near the coast—possesses superior advantages in its soil, climate, and conformation for sheep husbandry. These advantages were recognized by Washington, Jefferson, and many others of the farmer statesmen who laid the foundation of the Republic. They endeavored, by introducing the best breeds of sheep and in other ways, to encourage the industry. But these wise and patriotic efforts failed to establish sheep husbandry on a permament basis in the South, and to-day the Southern States east of the Mississippi possess only a small fraction of the number of sheep they might easily and profitably carry. Sheep and grass go together, but cotton and grass do not, and cotton is the great money crop of the Gulf States. With the rapid advance the South is making in all the useful arts we may hope for a more diversified agriculture; a system which shall include countless flocks to turn the surplus cotton seed into wool and mutton while assisting to maintain the fertility of the soil.

Meanwhile, in a limited area of the South, there has existed (it cannot be said to have flourished) for centuries a peculiar race of sheep, which have so adapted themselves to the situation that they have survived all vicissitudes. They are the sheep of the "piney woods" region, extending through parts of Georgia and the Gulf States. In general characteristics of form and fleece they seem to be degenerate Merinos. Of their origin and history nothing definite is known. The people who own them, if asked, will reply that they have always been there. The most plausible theory—in fact, the only one which is supported by known facts—is that these sheep descend from Merinos brought to Florida by the Spanish adventurers, half a century before the Pilgrims set foot upon Plymouth Rock. It is recorded that the founders of the city of St. Augustine brought sheep and other domestic animals with them from Spain. There is no record of any subsequent extensive importations of fine-wooled sheep to this region. These facts, in connection with the distinct Merino character of the sheep and their wool, afford strong grounds for the belief that the flocks of those early Spanish colonists were the direct ancestors of the sheep which have so long led a semi-wild life in the piney woods.

These sheep are small and agile. Their wool is nearly as fine as the pure-bred Merino, though not as finely crimped, being long and lustrous. The fleeces average about four pounds each, one season with another. Great flocks of these sheep feed through the piney woods in small groups during the day, coming together at night in a "bedding-place," where they lodge. Such a group, engraved after a photograph taken in the piney woods of Florida, is seen in our illustration. In this manner each flock will make a circuit of many miles, picking the herbage and browsing such forage as may be found. During the winter months the rams feed by themselves, apart from the ewes.

The lambing season, which comes in early spring, is one of terror and peril for the helpless flocks, and loss to the owners. Running at large, unattended and unfenced, they are environed at all times by enemies, which they learn to elude by ceaseless vigilance. Aside from predatory wild animals, which are less in the piney woods than in the newer trans-Mississippi region, the principal ravagers are the dogs, which abound among the freedmen, and still worse the lean, greedy, active "razor-back" swine, which forage through the piney woods as untamed as the sheep themselves. With them the feeble quavering bleat of a new-born lamb is the signal for an onslaught, from which not even the mother ewe always escapes alive. It is rarely that more than three-fourths of the increase survives the perils of this period.

As shearing time arrives there are grand "round-ups" similar to those of the cattle-men on the plains. The time having been agreed upon by the respective owners, they assemble early in the morning and ride to the bedding-place where the unsuspecting flock is still reposing. When the timid, half-wild animals are suddenly aroused to find themselves surrounded by mounted men, armed



A FLOCK OF FLORIDA PINEY WOODS SHEEP.

with long whips, a scene of panic and confusion ensues. There are piteous bleating and wild-eyed fright, huddling and hustling, and as some of the spirited rams make a break for liberty there are racing and chasing through the shady paths of the piney woods. At length all are brought in, and the whole flock is driven to the already prepared pens, where the work of division, marking, castration, and shearing is performed. Each mature sheep bears the ear-mark or other mark of its owner, and by this means is readily picked out, as the marks are all known not only by their owners but also by all the other sheepmen. Each lamb is given a mark like that of its mother. If any have lost their mothers or been weaned, like "mavericks" of the Western herds, they are divided *pro rata*. Only the best and most vigorous ram lambs are left entire.

This "go-as-you-please" style of sheep husbandry which existed for ages seems to be better adapted than any other to the conditions of the country, but it will be modified as those conditions disappear before the advance of agricultural progress. The pine forests are falling under the ax of the lumberman, the turpentine maker, and in a more disastrous way are swept by forest fires. The land they occupy will in time be fields of whitening cotton and waving grain, orchards, truck-farms, and green pastures. The piney woods sheep —hardy, acclimated, and thoroughly inured to the situation—will form a foundation stock from which, by crosses with the improved American Merinos of the North, may spring flocks of superior sheep. The sheep husbandry of the South, which was the dream of Washington and his compatriots, the theme of Randall and other more recent writers, will become a golden reality.

THE AGRICULTURE OF THE SOUTH.

JAMES K. REEVE.

Within the past decade we have heard much of the "New South." Its rapid advance in manufactures, in mining, in the building of towns and cities, has been such as to attract universal attention. Of its agricultural growth and opportunities, less has been said; although there is now, and has been for some time past, a steady trend of migration toward that section.

The Northern or Eastern immigrant who goes to the South must not carry with him too great an idea of reforming the entire practice of agriculture which prevails there. There has been something of a tendency to sneer at the "slovenly methods" of the Southern farmer; to denounce him as a "one crop" man; and to say that his crop is always sold (to the factor) before it is grown. The test of methods is the money value obtained from the land, and the Southern farmer, year for year and acre for acre, obtains a greater value than the farmer of any other considerable section except the fruit grower of California. The assertion has been made to me, and I am not yet able to disprove it by figures, that the South produces more "per land, per hand, and per plow." There are two good reasons why the Southern farmer is a "one crop" man, as he has been in the past and yet is to a great extent. First, he can get more money "per land and per hand" from the cultivation of cotton than from any other crop. Second, negro labor, upon which he must depend almost exclusively, can be better controlled in the cotton field than anywhere else. It is a crop—and almost the only one—that the southern negro likes to cultivate, and in which he can be depended on.

If the Southern farmer is constantly in debt to his merchant or factor for advances upon his crop, it is due first to the exigency in which he was placed at the close of the war, when, destitute of everything but the land, he was compelled to begin life anew; and second, to the fact that the crop is of greater value than the land, more readily convertible into cash, and hence more available for security than the land which the Northern farmer mortgages. But this condition is rapidly passing away, and a few more cotton crops such as the crop of last year has been, and a little more dependence on his own resources in the matter of farm and plantation supplies, will see him a comparatively free man.

Reverting again to "methods" of Southern agriculture. Perhaps nowhere else in the United States can be seen so good an example of broad business policy, of exact methods, and of proper conservation of the soil, as among the great sugar plantations of Louisiana, and certainly nowhere else does the eye gain such overwhelming evidence of the bounty and richness of the earth as when it ranges over those seemingly endless fields of cane, green and dense beyond any other cultivated herbage in our land.

But not all the soil of the South is the rich alluvium of the Mississippi bottoms, nor will all cotton lands make a bale to the acre, nor all corn lands produce sixty bushels. Yet in every part of the South cheap lands are to be found which may be profitably devoted to some branch of agriculture. There is much good cotton land yet to be occupied, notably in that vast plain of Eastern Arkansas that stretches from the foot of the Ozark mountains to the Mississippi, and the origin of whose soil is so plainly shown by the fact that in all its length and breadth can be found no single hillock and no particle of stone. This is uniformly rich soil, producing more cotton than any other except the Yazoo delta in Mississippi, and as good for corn as for cotton. About cotton there is this to be said, that the world's consumption of the staple shows a tendency to increase more rapidly than the production of the staple; so there need be no fear of future overproduction.

Corn may be profitably grown almost anywhere in the South. Although the yield is not always equal to that of the North, a proportionately better price is obtainable. On lands that are at all adapted to corn, this crop will pay as well, with good cultivation, as any that can be grown there. But, because of the fact already alluded to, that negro labor cannot be depended on for its proper cultivation, the best results in corn growing will be obtained by the small farmer who cultivates it mainly himself, and who knows and profits by his knowledge of the value of the fodder.

Hay farming is a profitable industry in the South, because the cultivation of grasses is not yet general, and the rapidly growing demand promises good prices for a long time to come. Experimentation has resulted in the finding of grasses adapted to almost every section. Dairying, near centers of population, may be successfully followed in connection with grass farming, as the almost universal price of milk is forty cents per gallon the year round, and by reason of the short winters, and generally free range, the cost of keeping the stock is not so great as in the North. That is, provided the dairy farmer will grow his own feed. To purchase any large portion of it would prove a losing investment.

In the vicinity of the new towns that have sprung up so rapidly in the New South are opportunities for market gardening that do not seem to have been well followed up. At various points gardening for the Northern markets is an extensive industry, while these good home markets are overlooked, and they are compelled to bring their supplies from a distance. Throughout the South the gardener has the advantage of a long season, and in the extreme South, as along the Gulf coast, he has two distinct seasons of planting and harvesting each year, and along this coast are opportunities similar to those in the vicinity of the new manufacturing towns: resorts, both for summer and winter, with their accompanying big hotels and consequent demand for liberal food supplies, are increasing very fast; at present many of these rely wholly upon distant city markets for vegetables and fruits, while thousands of acres of lands lie uncultivated about them.

For fruit and wine growing, the coast of the Mexican Gulf, from the mouth of the Rio Grande to the west coast of Florida, might soon rival California were the same enterprise devoted to its development that has made the Golden State so famous. In the single matter of fig growing the lands along the Mississippi sound would afford a competence for hundreds of small orchardists. As an article of commerce, the domestic fig is as yet comparatively unknown. Aside from the California crop, such as are produced are grown almost without any effort toward a definite industry, but the entire product is quickly sold at remunerative prices, and the market receives nothing like an adequate supply.

The South may well claim to be agriculturally great because of its cotton. But the production of a single staple is not the road to the best agricultural supremacy. Especially is this true when it is a staple that is not produced for the sustenance of the people. But the combination which now exists in the South of the production of such a staple on a vast scale, and the rapid building up of towns through the development of mines and manufactures, offers the basis and opportunity for the development of the most complete agriculture, and progress along this line is the one thing of which the New South now stands in greatest need.

Too Much Fertilizer.—It is quite possible to overdo in the matter of fertilizers, and this fact has been brought out fully at a number of experiment stations. Fertilizers are a good thing when they are needed in the soil for the crop, but they are not always needed. It is always well to have a small surplus of plant food in the soil, but beyond that it is not profitable. It is true that additional fertilizer may bring an increase of crop, but too frequently, upon a rich soil, that increase is at a loss. It is not the largest crop that is always the most profitable, for an increase of yield may cost too much.

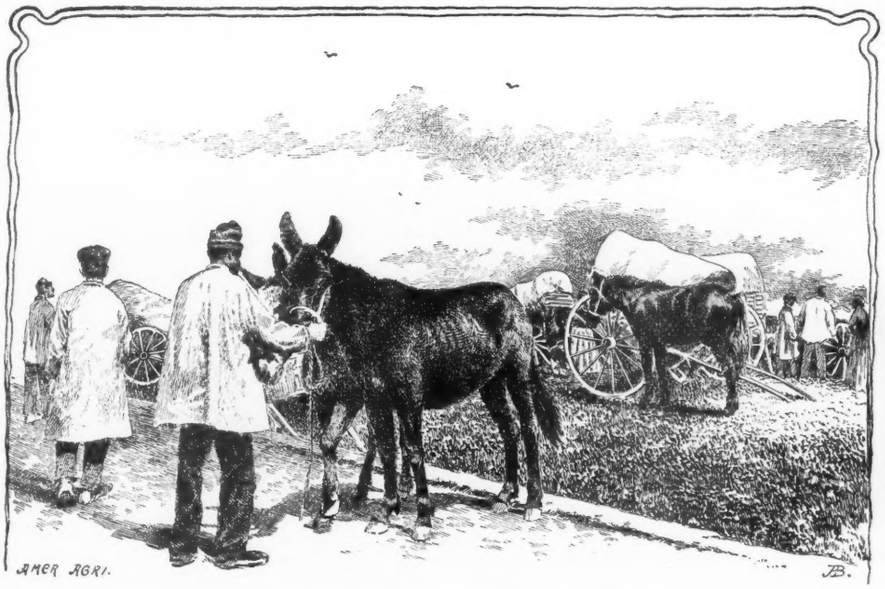
MULE BREEDING.

DR. A. S. HEATH, FRANCE.

Probably in no other country is mule breeding carried on as extensively as in France. In Poiton alone 40,000 mares are bred to jackass sires. Notwithstanding the extent of the industry, not even the French, who are so anxious to make money in every business, in this especially, neglect the most important prerequisites to success. No care is taken with the breeding of the dams. It seems as if the poorer the mare the more liable to put her to mule breeding. In this as in other lines of breeding the very best parents are none too good to secure valuable progeny.

The Poiton mares are a mixture of the poor blood from anywhere. The coarser the better so long as size is secured. To get a large foal both sire and dam must be large, and the sale of the mule depends mainly upon size. Probably the coarse, phlegmatic Flemish stallions produce the large Poiton dams, but they lack quality. Size, however, is not all that a judicious purchaser of mules demands. There must be quality. The lack of this the French seek to cover up by fattening the mules like bullocks for slaughter. In fact the mule is not the only animal of the equine race loaded with fat to make it marketable. Draft horses are treated in the same manner.

As mules are generally purchased for heavy and hard work, size and strength are important. For this purpose the Poiton ass, if of fine quality, is a good sire. In height he stands from thirteen hands three inches to fourteen hands three inches, sometimes even reaching fifteen hands. His head is too large, perhaps, his ears long, broad, coarse, hairy, and drooping; his neck is thick, chest broad, stomach large; common bones flat below the knee, which is large and strong, as are all the joints. The haunches are too flat, but the hocks are as large as those of a cart-horse The bones of the hind legs are flat, broad, and strong. The fact is, the muscles of the ass are small but steel-like. By careful selection of both the sire and dam of the ass, a finer and better mule sire may be secured. The ass-colt is cared for and fed till ten months old, when it is weaned and put in a box-stall and pampered till sold or old enough for service if deemed large and coarse enough.



A MULE MARKET IN FRANCE.

For large draft mules the mares should be large, fine, and well-bred. They should be good milkers, having capacious stomachs, deep flanks, and not too closely coupled. The Percheron, Clydesdale, Suffolk, and large Breton mares of good constitution and kind disposition are best for draft mules. But for fast, light-driving mules, the Norfolk, Hackney, and the American road mares are none too good. For saddle mules, solid thoroughbred mares are the best dams. In breeding mules service is required. The ears are natural appendages that may be fined down, doubtless, by long and careful selection of sires. Well broken and kindly treated mules make pleasant and serviceable animals of great economic value.

Jackass sires bring from one thousand to three thousand dollars each. A pair of good, heavy, strong mules bring from six to eight hundred dollars; often, if extra good, double that amount. Almost any good mule, even if small, can be sold for from one to two hundred dollars. The writer has ridden after a pair of mules three years old that could show close to a three minute gait, and could and did cover five miles in twenty minutes. For the saddle, mules are safe and pleasant to ride. They have good, sound feet, and are sure-footed.

It is a common saying that a good horse cannot be of a bad color; but there may justly be a preference for color, even in a mule. Dams of mules should be bay or brown. A good mare, if a chestnut or black, need not be excluded. Mares of light colors are decidedly objectionable, as liable to throw light-colored mules. Mules look bad enough without having coats that show every stain of the stable. [The accompanying illustration, engraved after a photograph taken for our correspondent, presents a characteristic scene of a mule market in France.]

SWEET WHEY FOR PIGS.

JOHN GOULD, OHIO.

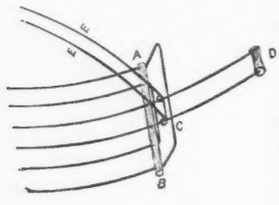
The profitable keeping of cows must carry with it a careful feeding and utilizing of what are often termed the wastes of the dairy. At the farm this waste consists of washings of the dairy utensils, milk and whey. The practice of the past has been a hit-and-miss attention to this matter. The waste of the dairy has been dumped into a swill-barrel that had not been cleaned or scalded from the day that it was placed at the rear of the house. The contents of this barrel are, therefore, actively sour from April to November, and the feeding elements of the food that went into it were consumed to a greater or less degree by the ferment that fed upon the sugars it contained. That a hog wanted sweet food was out of the question. When the co-operative factory and creamery took the place largely of the home system of dairying the whey vat, cared for precisely like the swill-barrel, took the place, and into this tank, ever uncleaned, went the whey, buttermilk, and "rinsings" from May to December. Now that it is demonstrated that sweet food is far better for an animal than sour, that souring food largely consumes its principal element, sugar, the practical question is how shall this sugar element be retained? Simply through the scalding and washing of tanks and barrels at least every other day to keep them sweet, and during the summer have a coil of steampipe in the vats, and as quick as the sweet whey and buttermilk is run into the vats turn on steam, heat the whey up to 150°, then change the steam to cold water, and reduce the mass as low as the water will make it, and then feed out in twenty-four hours. If there is a surplus run it out, and use only the fresh whey, etc., each day.

Whey has, when fed sweet, more feeding value than many suppose. That sweet whey has killed pigs was the fault of the man, by overfeeding and refusing the pigs any solids outside of what they found in the whey. One hundred pounds of whey contain as a rule four pounds of sugar, three-fourths of a pound of cheese, and often as much butter fats as cheese, that the unskilled cheese- and butter-maker has allowed to escape him in manufacture; so that to get about five pounds of food solids the pig or calf must drink one hundred pounds of whey, and to do this they distend their stomachs to the size of small balloons. If this whey and milk has become sour the sugar becomes consumed to a large degree, and the food, if fed without grain, becomes all the poorer, and soon the farmer declares that "whey is no better than spring water," and he has his doubts even about sour milk; but he still feeds both sour, because tradition says it must be, as "sweet food is injurious to small stock."

At the Wisconsin experiment station the feeding of whey has been made the basis of several elaborate tests to ascertain whether it was possible to give whey a value in feeding experiments. Fed alone it was not found to be a successful ration, even when fed sweet, but sweet whey was discovered to have a greatly enhanced value fed with grain, like cornmeal or shorts. In the tests seven

hundred and fifty pounds of sweet whey when fed with grain showed itself equal to one hundred pounds of mixed meal, so at present prices of grain, twenty-five dollars per ton, sweet whey is worth sixteen cents per one hundred pounds.

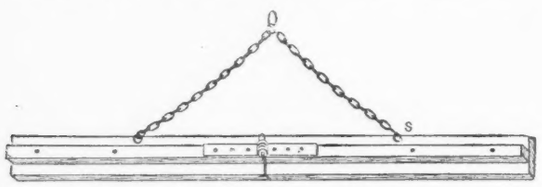
One great trouble with whey when fed alone is that it has but little nutrition for the muscular system. The pig fed on whey alone—especially so if it is sour—soon has a soft, flabby make-up and a very bleached-out look, that shows that there is a lacking quality to the ration. If protein foods like oats, peas, shorts, and the like, are fed with the whey there is a result attained greater than the added growth and weight of either if fed separately, a sort of two and two make six, showing that the combination of whey and grain has produced in the pig a building of muscle and tissue that has made a waste product, by intelligent feeding, take its place in the profitable ration list. The lesson is that profits in feeding stock of any kind come from a combination of foods, especially so in young animals, producing greater thrift, weight, and, therefore, profitable keep.



IMPROVED FORK.

A CHEAP STUBBLE-BREAKER.

The accompanying sketch gives a good idea of a homemade stubble-breaker and leveler to use after sowing grain. The inventor of it, J. Flomerfelt, Somerset Co., N. J., writes us that it works best on a mowing when the stubble is frozen, as then it breaks it "like pipe-stems." The breaker is made of a two- or three-inch plank, and with pieces bolted on the top, so that a hinge can be attached,

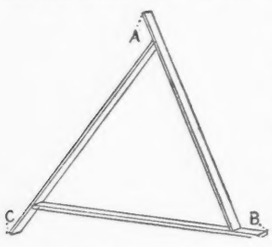


HOMEMADE STUBBLE BREAKER.

it works well on uneven ground, and is easily taken apart in storing away. Being eighteen feet long, it works fast and is not hard for the team. To take it to the field, unhook the chain at *s* and draw it endwise. The hinge should be one of those with an eye and key to take apart easily.

A DEVICE FOR MEASURING LAND.

Take three strips of batten two inches wide, half an inch thick, and six feet long, and nail them together, as shown in the accompanying engraving. After fastening them together, saw off the ends so that the air-line distance from A to B, from B to C, and from C to A shall be exactly five and a half feet. A man can stand erect in using this, and roll it over at a walking gait, each revolution measuring one rod. In commencing, place B at the starting point, letting C be in the direction you are to measure, and A pointing upward. A colored tag should mark A to remind you to count one each time it comes pointing upward. The advantage of this shape over that of a common triangle is that it permits straddling over slight objects or elevations, and thus does not measure the circuitous distance over them, a fault of all wheel measures. This measure is very light, a rapid worker, quite accurate, and requires no stooping on the part of the operator.



LAND MEASURE.

AN IMPROVED FARM FORK.

A. J. PIERCE, SOUTH DAKOTA.

In the West, where so much grain is cut with the header, and the straw is broken fine in the process of threshing, the ordinary pitch- or dung-fork is found wholly inadequate for quickly handling such straw when desired to be moved. Even the large barley-fork fails to "get there" as fast as desired. Now a tool having six or more slender steel tines, about thirty inches in length, arranged as here indicated, with the two central tines prolonged to form a handle, is a great convenience. The head A B is a piece of hard wood an inch and a half by two inches, and two feet long. The two outside tines are made of one piece and bent to form the bail C for the left hand. The next two tines are also continuous: E E are over-tines, made in one piece, and they may be attached when carrying straw on a windy day. They slide on the handle under the bail, and may be grasped at D. I have tested the idea by making a wooden one, using strips of barrel staves for tines. I find the tool practical, but some of the tines persisted in straightening out, spoiling its efficiency. Again, by enlarging the whole affair, and attaching a pair of wheels to the headpiece, we have an efficient manure truck that is loaded and dumped instantly.

CHEERFUL FARMHOUSES.

FRED. GRUNDY, ILLINOIS.

In driving along a somewhat noted road that runs due west through a fine farming section of this State one is struck with the great difference in the appearance of the dwellings situated on the north side from those on the south. Nearly all of those on the north side have large bay windows filled with blooming plants and ample verandas fronting on the road and appear to be pleasant, sunny houses, while most of those on the south side seem cold, windswept, and rather forbidding in appearance. In contrast with them is a rather small house situated on the south side of the road, which the writer lately found. It seemed so neat and cozy that permission was obtained to examine it more closely, and procure the plan. The owner is an intelligent and prosperous AMERICAN AGRICULTURIST reader. In compliance with a request he made a drawing of the plan of his house, and also of that of his brother, situated on the same side a few hundred yards farther on. He said that as he always felt safest near the ground in stormy weather he had built his house but one story high. The main part of plan, Fig. 1, is sixteen by twenty-four, with ten-foot posts. This gives a high ceiling and makes the rooms appear large, light, and airy. The parlor fronts north and east, and has a large bay window in the east side which catches all the morning sun and enables his wife to keep a fine collection of flowering plants in bloom. A neat window on the north gives a full view of the road. Adjoining the parlor are two bedrooms having a sliding partition between them which can be moved aside with a touch, converting both rooms into one. Instead of doors heavy curtains are used between the parlor and bedrooms. In the bedroom is a large closet which is kept warm and dry by the flue. From the parlor a door opens into the kitchen, which is west of the main part, and is twelve by fourteen feet. On the north of the kitchen is the entry having a fancy glazed outside door, and plain glazed doors opening into parlor and kitchen. The entry is thus lighted from without in daytime, and from within at night. Here

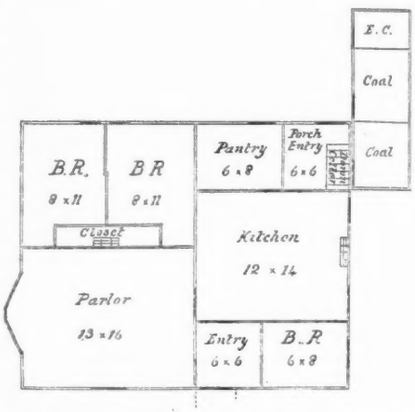


FIG. 1. PLAN OF FARMHOUSE FACING NORTH.

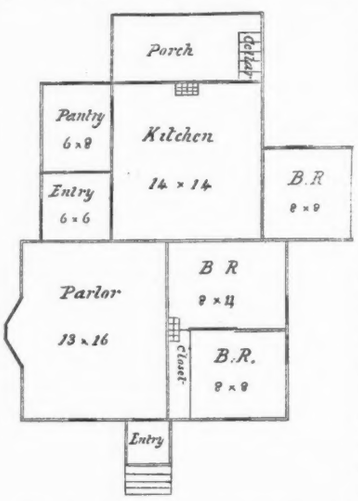


FIG. 2. PLAN OF FARMHOUSE AT LOW COST.

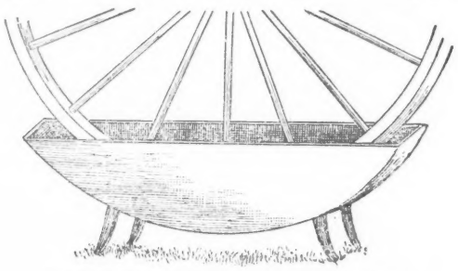
are hooks and rack for coats and hats, a bootjack and slippers. Adjoining the entry is a small bedroom used by the hired man. On the opposite side of the kitchen is a convenient pantry. At the end of that an open porch entry inclosed with wire cloth to exclude flies. Here also is the entrance to the cellar which is under the kitchen. This porch entry is protected from cold west winds by a neat coal house, as shown in the plan. At the end of the coal house is an earth closet, a place which is so admirably arranged that it is as neat and free from odor as a parlor. It will be noticed that in order to enter the house from either way it is necessary to pass through two doors. This arrangement effectually excludes flies in summer and cold draughts in winter, which all sensible housewives will appreciate.

In plan No. 2 the side of the main part is toward the road, and a neat little entry is built in front of the door. The kitchen bedroom is built on the west side of that part. A large porch on the south, latticed at each end and inclosed with wirecloth, makes a nice dining-room in summer. I noticed that the path leading to the kitchen entry was worn much more than that leading to the front door. The coal houses were about thirty feet from the kitchen door. Both of these dwellings are well protected from the west and northwest winds, by effective windbreaks of Norway spruce and red cedar, while white pines judiciously distributed on the north and east destroyed the force of cold northeast gales.

These two houses—especially the first—are neat and tasteful in appearance and possess much of the comfort and many of the advantages of those fronting south. The plans are commended to the consideration of those who are obliged to front their dwellings to the north, believing that they will find in them many useful hints.

PRESERVING WHEEL-RIMS.

A. W. Colson, Iredell Co., North Carolina, sends us a sketch and description of the device illustrated herewith for oiling the felloes of a wagon wheel to prevent shrinkage. It is simply a narrow



TROUGH FOR PRESERVING WHEEL-RIMS.

castiron trough with a concave bottom, of any desired curve, width, or length, supported on legs near each end. The trough is partly filled with oil, a small fire kindled under it, with due precautions to prevent igniting the oil. When the oil is sufficiently heated the rim of the wheel is immersed and slowly turned around as the heated oil penetrates the wood until the entire rim is treated. The advantages claimed for this device over a rectangular trough of galvanized iron are, it requires less oil, as it conforms more nearly to the curve of the wheel; being of castiron, it serves as a vessel in which to heat the oil, as well as to soak the felloes; it is more durable than galvanized iron, and no more costly. It is not patented.

Topdressing Winter Wheat in the Spring.—This is, and has been for many years, a common practice among English farmers. At first they used Peruvian guano, but when the supply of the rich nitrogenous guano that was deposited in rainless regions was exhausted, they used sulphate of ammonia instead, but now that nitrate of soda is so much cheaper and more immediately available, this fertilizer is used at the rate of about 150 pounds per acre, sown broadcast early in the spring. D. C. McPherson, an intelligent farmer in the town of Wheatland, N. Y., writes us that he finds nitrate of soda a valuable manure for root crops, but that when used as a topdressing on wheat "it produces too much straw and the wheat lodges." He proposes, however, to try it again. The fact that it produces so much straw shows that it is a rich manure. Probably Mr. McPherson used it only as an experiment on a small scale and put on more than was needed. We have used 250 pounds per acre, sown broadcast early in the spring, and the wheat "was as black as your hat," but did not lodge. Last year we used it on several acres in a large field of wheat, with decided advantage. The wheat had been phosphated in the fall.

HOW TO MAKE A FARMER'S LATHE.

W. H. JOHNSTON, N. Y.

The lathe described herewith is inexpensive, effective, and durable. With proportionate change in the strength of material used, the lathe can, of course, be made in different sizes. These dimensions are for one that will turn a piece of wood eighteen inches long by six inches in diameter. For the bed or table select a piece of two-inch spruce or yellow pine plank, ten inches wide, and about four

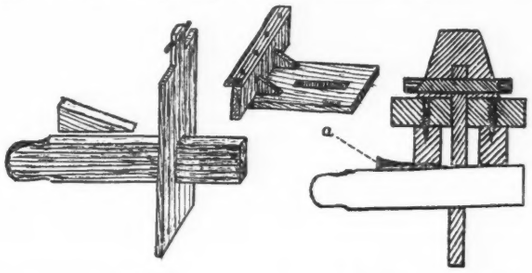


FIG. 1. TOOL-REST. FIG. 2. SECTION OF BED.

feet in length. Cut its ends off so that it shall measure exactly four feet and, having planed it down, saw a slot two feet long by one and one-eighth inches wide through it. This slot should run lengthwise exactly down the plank's center line, and having been started eighteen inches from one of its ends will necessarily stop six inches from the other. As stiffeners to the board, screw to its underside two three-inch strips of two-inch stuff, put on edge and fastened along each side of the slot one inch away from it. These should extend to within two inches from the ends of the plank, that is, they should each be three feet eight inches in length. The next thing in order is the tail-stock; this is the sliding part on which one end of the article to be turned is pivoted. To make it, get a piece of wood, the tougher the better so long as it can be worked, and cut out roughly a block eight inches long by six inches wide and five inches high, the grain running in the direction of the latter dimension. Shape the block so that its base will measure just six inches by eight inches and cut it down to five inches in height. One of the five- by six-inch ends should be made perpendicular to the base, the other and the sides taper as they rise, making the top surface five inches long and three inches wide. The last operation in the construction of the tail-stock consists in cutting a mortise in its base. This is four inches long by one and one-eighth inches broad and extends into the block not less than two and one-half inches. The mortise should run lengthwise along the middle line and should be started one inch away from the front or perpendicular end. Next make of some hard wood—green hickory is as good as anything else—a stick fifteen inches long, four inches wide, and one inch thick. This is pushed into the mortise just cut, and fas-

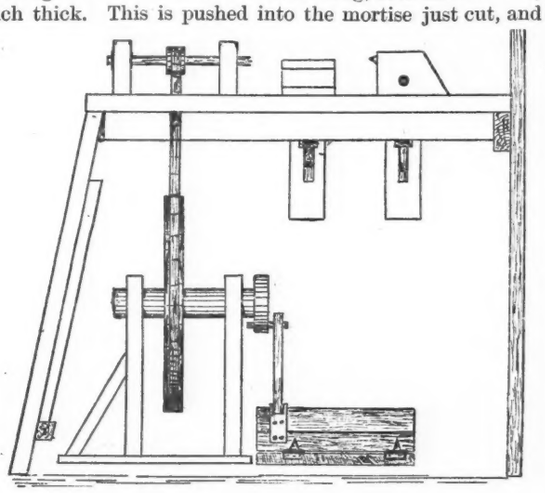


FIG. 3. THE LATHE COMPLETE.

tened there by means of a wooden pin driven into a hole, which is bored so as to pass through the mortise from side to side. The pin is an inch in diameter and may be allowed to protrude from each side of the block for about an inch, the knobs thus forming handles to the tail-stock. Cut a hole in the stick three inches long by one inch wide, locate it so that its upper end is five and one-fourth inches from where the stick comes out of the block. Next make a

stick sixteen inches long, which shall fit loosely in the hole last cut; one end may be rounded off to make a handle. This finishes the tail-stock and its clamp. Fig. 2 represents a section of the bed, tail-stock, and clamp, and shows clearly the arrangement of the pieces described; *a* is a wedge made to slip in between the clamp-lever and one of the three-inch stiffeners.

The head-stock requires more careful work, but is not at all difficult to make. On the end of the bed-plank, that was left clear for eighteen inches, screw two pieces of two-inch oak board, they are set on edge and placed with their grain running across the bed. One of these is fastened, extending exactly across the bed and one inch from the end of the one and one-eighth inch slot, the other is placed a foot away from the first and parallel to it. Make the oak pieces six inches wide, so that when set up they shall be one inch higher than the tail-stock. Then get a piece of three-quarter-inch rod iron fourteen inches long; file one end of the rod wedge-shaped, then make two file cuts, one on each side of the middle of the edge just made. This makes three points on the end of the rod; file the side ones down a little and sharpen all three of them. In each oak piece of the head-stock bore a hole to fit the rod, just four inches above the lathe-bed. Upon the careful location of the holes depends the entire success of the lathe; the utmost pains should be taken to make them true to each other and to the lathe-bed. Pass the rod through these holes and having adjusted it so that its middle point is right over the end of the slot, nick it on each side of the second oak support and once midway between both of them. Get a blacksmith to make a hole through the rod at each of the places nicked. The first two are to have iron pins through them, to keep the rod in its place; put an iron washer on each side of the support, between the pin and the wood, to prevent its being worn away by the constant rubbing. The third hole is made a trifle larger than the other two, and by means of a pin keeps the driving wheel in place. Having now got the rod in position, set up the tail-stock and run it forward in the slot until it strikes what is technically known as the "live center," *i. e.* the middle prong of the rod. If the adjustment of this has been perfect the point will only prick the tail-stock; but very likely a small circle will be generated on it when the rod is revolved. In the center of this circle bore a small hole, and put in it a good heavy wood screw, force this in until but three-quarters of the shank (not counting the head) remain outside of the block. Cut the head off and file the shank down to a point. This is the "sliding" or "movable center." The driving wheel should be made of two-inch stuff and be about three inches in diameter; it is best to cut one out roughly at first,—any sort of a thing to keep the lathe going while a good one is turned out to take its place. The fly wheel should be twenty-four inches in diameter. The sliding-tool-rest is made with a clamp like the one used on the tail-stock. Its parts are shown in Fig. 1. If legs are put on the lathe, make them of very heavy stuff and nail them to the floor. A better way of setting it up is to fasten one end of the bed to a wall and the other to some solid support built from the floor. Fig. 3 shows the machine set up. If the lathe works well, it will be a good plan to make a pair of metal bearings for the spindle. Short pieces of iron or brass pipe may be used for this purpose. Turning tools may purchased of any hardware dealer. Unless familiar with the mechanism of the ordinary lathe it would be well for the intending builder to see one before he begins.

UNPROFITABLE PLOWING.

WEBB DONNELL, MAINE.

There are two reasons for plowing:—the need of burying a surface growth of sod under the soil, where it will decay and add its elements to the general stock of plant food, and the need of lightening the soil so that the air and sunlight can permeate it and make available the plant food already there. The mechanical moving of the soil is designed to accomplish these results and secure a proper seedbed for the crops to be raised. But plowing at its best is slow, laborious, and expensive. In the inversion of the sod the plow-share is the only available agent so far. There is serious ground for question whether farmers as a whole do not rely far too much upon this implement in the preparation of their land. When a field has been planted for one season, and the crop given clean culture so that no weed growth is left in the fall, it ought to be put into first-class condition for sowing, either then or in the following spring by the use of one of the modern cultivators or harrows, constructed with the disc or cutaway. Old land that is properly drained ought to work up into a perfect seedbed by such treatment, being stirred as deeply as it would be by the plow, and pulverized much more finely. As a matter of fact the plow does not break up and pulverize the soil as much as is desirable, unless a narrow furrow is made. The tendency of most shares is to throw the earth bodily from one position to another. With one of the harrows mentioned the soil is thoroughly stirred, pulverized, and lightened to as great a depth as one may desire, and at an expense for labor that is trifling compared with the operation of plowing.

The natural objection to such a course on the part of many would be that old land is often more or less covered with grass and weeds after the crop is removed. There is the rub! Poor farming one season necessitates increased labor in the following. Not only did those weeds help to exhaust the land, rob and crowd the growing crop, but they also make it necessary to plow the field for the next crop, so that their tops and roots may be gotten out of the way. Clean culture will obviate this difficulty and pay well, not only in the subsequent care of the land but in the increased crops that follow.

POULTRY PICKINGS.

J. W. CAUGHEY, PENNSYLVANIA.

Raw meat in moderation, chopped fine and fed about thrice a week will stimulate egg production. One pound of meat is sufficient for fifteen hens. Some cook it, but raw meat is by far better.

Don't permit the water from the manure to drain under your poultry house; if you do you will be sure to regret it. Dampness of any kind is not tolerated with a healthy flock of fowls.

For any one wanting a white fowl of excellent laying qualities the White Minorca will be sure to please. Like the White Leghorn they have their separate admirers and the qualities of each are more or less distinct.

Fowls, like pigs, are fond of milk. Sour milk is considered the best, and brings on laying if given them daily summer and winter. Many fanciers have a surplus of milk, and the pigs get all of it. Try dividing a portion, and let the hens in on the quiet; they will soon show whether it benefits their general health.

All farmers should keep pure-bred poultry; there is no economy or profit in common barn-yard stock. They eat no more, and certainly a thinking farmer prefers the blooded fowl, and will keep it and no other. A good farm should naturally demand good stock; certainly they are in harmony with each other.

Turkeys now have the call, and will be largely marketed from now on. The States of Rhode Island and Connecticut produce most of our large turkeys. The New York, Boston, and Philadelphia markets absorb the bulk of the birds sold. Many farmers in these two States raise from one hundred to twelve hundred turkeys each, every season, and find them among the most profitable of farm fowls.

Corn is best for an evening feed. It may be given in conjunction with other grain, but in cool weather nothing keeps up a more uniform body heat than corn. The grinding capacity of a hen's stomach is great, and before morning arrives her meal of the previous evening has disappeared, and something to take its place is necessary. Corn lasts longer and produces more heat than any other grain fed to poultry.

Many poultry breeders place eggs with the farmers near at hand, allowing them so many chicks out of every setting hatched and reared. In this way several hundred eggs are set, and by late spring the farmer has a large flock of growing chicks aside from what he attends to himself. There is a saving of both labor and time in pursuing this plan. It is a move worth trying by those who aim at rearing large flocks of chicks.

I do not recommend artificially heated poultry houses, but advocate good, dry, tight buildings, free from cracks or air holes. Cracks tend to keep a house cold, and result in more or less roup and sickness generally. Unless one is raising chickens by artificial means and brooding them by heat, it is best to keep them comfortable with plenty of good straw under foot, and a perfectly tight house, with ventilation to take away all bad odors. Ventilate moderately at all times.

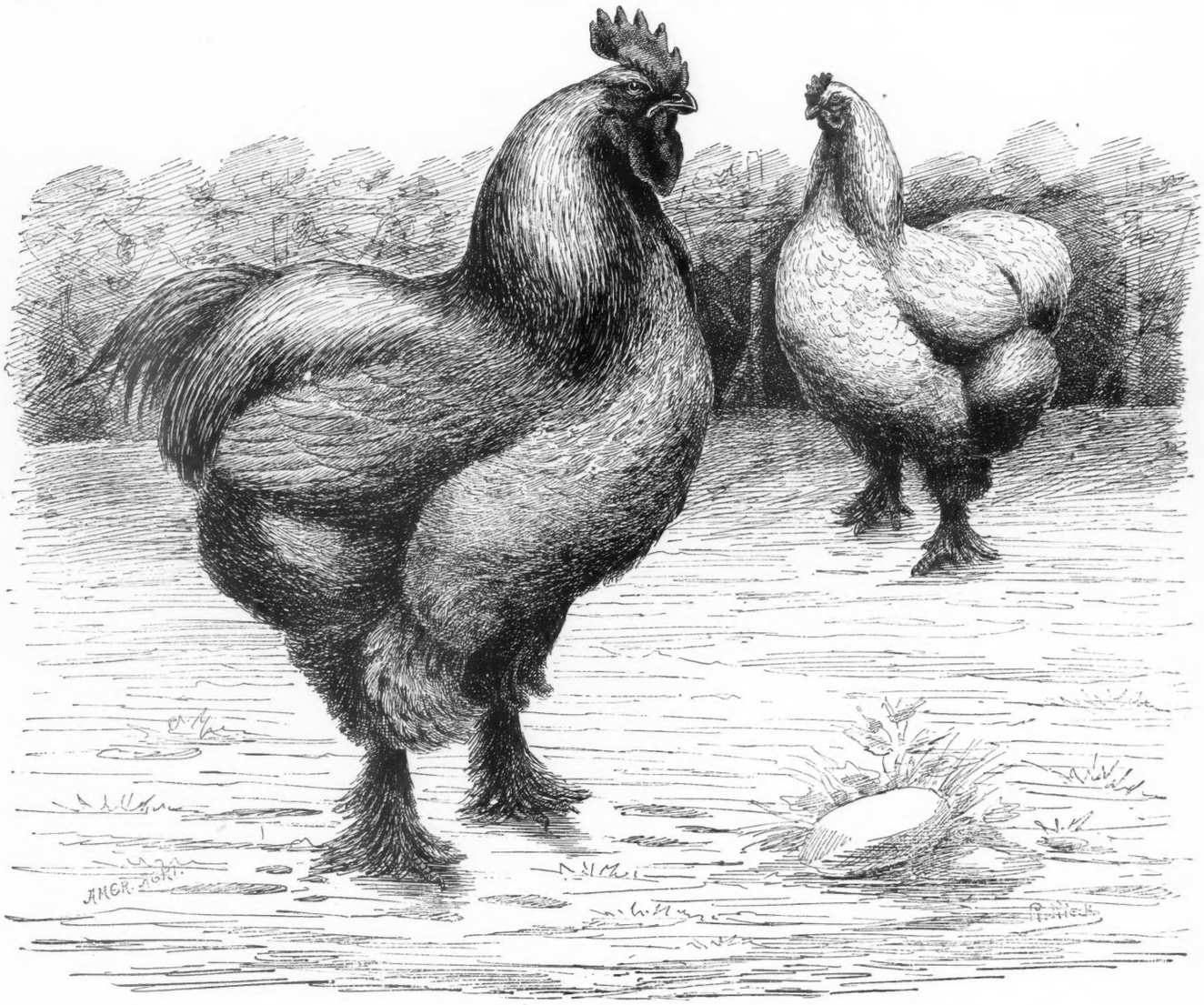
The incubator should be started in late autumn and kept running continually until the first month of summer. There is not much profit in chicks hatched later. By the time June chicks are hatched and ready for market it is flooded with them from every section. During early spring is when the profit is obtained. Chicks sell for $1.50 per pair then, and they cost about thirty-five cents to raise to a marketable size. One can readily see the profit at a glance. An incubator handled properly should pay handsomely. Try it.

THE BUFF COCHIN.

H. S. BABCOCK.

Of the four standard varieties of Cochins—the Buff, the Partridge, the Black, and the White—the Buff, in all that makes a Cochin, unquestionably stands at the head. It has not been so popular in the past as the Partridge, and perhaps is not now, though the fowl has enjoyed the last few years a greater popularity than usual, and this season has been in great demand; so great that some of its breeders early in the season were obliged to advertise that they could fill no more orders for eggs for hatching. This greater popularity has been due to two causes: First, there have been organized clubs for the purpose of advancing the interest in the variety, and these clubs, by means of suitable literature and attractive premiums at the larger shows, have directed public attention to the attractiveness and merits of the fowl; and, secondly, there has been a revived interest in the color of the plumage by the introduction of a Buff Leghorn from England, by the production in this country of a buff fowl of about the size of the Plymouth Rock, and by the attempts to produce—attempts which bid fair to be successful—a Buff Wyandotte. And really this plumage is one that deserves to be produced on more varieties than the Cochin, for buff is exceedingly handsome, looks neat and clean in all situations, and harmonizes with the yellow skin and shanks that the American market demands. It is not singular that greater attention is now bestowed upon it, the wonder being that for so many years only one variety of large fowls and one variety of Bantams have been clad in a plumage of this color.

The Buff Cochin is of Chinese origin, the earliest specimens having been imported into England and this country from the Celestial Empire. The first so-called Cochins which were received were quite different from the fowl we know by that name, being rather smaller in size, and possessing in many cases no feathers upon the shanks and toes, and in no case being heavily feathered. But some forty-five or forty-six years ago Buff Shanghais (so named from the Chinese port from which they were sent) arrived in this country. These fowls had feathered shanks, but not so profusely feathered as the modern specimens. They were longer in leg, slimmer in body, and shorter in plumage than the Cochins of to-day, but they were the parents of the modern fowl. In those days it was the desire of owners to possess a Shanghai rooster that could eat corn from the top of a flour barrel, and great height was considered a very valuable quality. But ideas or fashions in poultry change, and little by little the length of leg and neck was reduced through careful selection; gradually the length, softness and abundance of the feathers was increased; slowly the body was augmented in size, and rendered more compact; until in time the modern Cochin, a great ball of fluffy feathers—"feathered from the ground up," as one admirer of the variety expresses the fact—was evolved.



PRIZE PAIR OF BUFF COCHINS.

The Buff Cochin cock of our day has for its size a rather short and small head, a single comb of small size, a short, neatly curved neck, a broad back, with a tendency to convexness, a broad, full, low-carried breast, a short tail, in which the sickles roll over neatly, very abundant fluff covering the posterior parts, and making the fowl look very wide behind, short legs, heavily feathered down the outer side, the outer and middle toes being well covered. The female is very much like the male, except the head is carried forward somewhat more; the back, owing to the full cushion, shows greater convexity in outline, and the fluff is even more developed. Sickles, coverts, and other male ornaments, are of course lacking. The excessive development of feathers has a tendency to diminish

the prolificacy of the fowl, and the Buff Cochin cannot be considered a great layer. Yet, owing to its full plumage, which keeps its body warm in the coldest months of the year, it is a good winter layer. This means a great deal, for eggs produced in winter, when most fowls are not laying, are worth so much more than those produced in summer that the smaller number may sell for as much or more than the larger number produced by summer layers. The eggs, too, are of good size, and the shell is of a rich brown color.

The fowl is a remarkably hardy one, the chickens hatched from the eggs resisting successfully the ailments that carry off so many of the chicks in broods of more delicate varieties. It is very discouraging to a breeder to hatch a large number of chickens and be able to rear only a small percentage of them, but the breeder of Cochins, unless the stock has been enfeebled by injudicious inbreeding, has not this discouragement to meet. His chickens live, thrive, and grow to maturity. From the shell up the Cochin may be reckoned more than ordinarily hardy. The short wings and heavy bodies of Cochins, and their very placid and contented disposition, make them fowls easily restrained and especially suitable for that large class of poultry-keepers who live in villages and are compelled to keep their fowls confined in yards. A very low fence will confine the Buff Cochin, and its easy-going nature does not chafe and fret at confinement.

Cochins are fair table fowls; not the equal of the full-breasted Games and Dorkings, but good enough to satisfy the cravings of a hungry man. Their rich yellow skin causes them to look fat even when they are not very fat, and their contented disposition makes it easy to fatten them readily. In fact when kept for eggs one has to exercise unusual care to prevent them from becoming so fat that they will not lay. They are persistent sitters, and though rather heavy for eggs, except those with thick shells such as they produce themselves, they make good incubators and are excellent to care for chickens, their long feathers proving the covering that chickens need. They are in no hurry to wean their chickens, but care for them as long as brooding is necessary. All in all the Buff Cochin is a very good fowl, and deserves to be more popular than it is.

[Our illustration represents a first-prize pair, and shows better than a verbal description the characteristics of the variety.]

HOW TO SAVE THE POULTRY DROPPINGS.

It will be found a great convenience, more cleanly, and a great saving to so arrange the poultry house that the droppings will all be concentrated in a limited space, instead of being scattered over the entire floor. This may be done in several ways, one plan of which is shown in Fig. 1, and consists in simply building an inclined plane of boards beneath the perches. About one foot from the floor edge of the inclined board is nailed a strip, *G*. Thus the droppings are all retained in a small space and can be easily

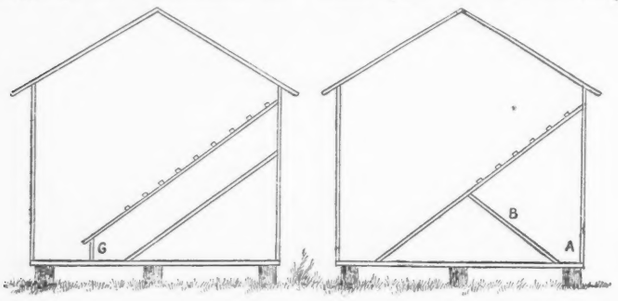


FIG. 1. IMPROVED POULTRY PERCHES. FIG. 2.

removed with a shovel, or muck, earth or other absorbents may be added at any time. In Fig. 2 the incline, *B*, slants toward the back wall, near the floor of which is hinged a long door, *A*, through which the droppings are removed without entering the building. The incline should be set at an angle of forty-five degrees, and steeper if possible. Any one of these improvements may be added to nearly all poultry houses now in use.

Saving in Horseshoeing.—Horseshoeing, though often written about, is by no means an exhausted subject. A great saving can be effected to no detriment to the horse, or owner, and in many instances a decided advantage will be gained, if we will only lay aside old ideas. A western correspondent writes us that he has had ten years' experience in the mountains of Colorado, staging, freighting, and ranching. His nearest railroad point is one hundred miles distant, and many ranchmen make the trip and bring in heavy loads over the range on a road that any farmer in the Middle States would consider impracticable. Besides, there are scores of ranch teams which make ditches, run mowers, haul hay and haul timber over rocky roads without ever having a shoe on.

USEFUL POULTRY FEEDING BOXES.

The common practice of feeding poultry is to scatter the feed upon the ground. This is a wasteful way of feeding, especially if the food be soft or of a semi-liquid nature. If one wants to keep a

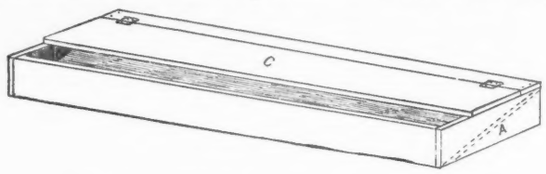


FIG. 1. FEEDING BOX WITH HINGED COVER.

supply before them at all times a trough of some kind should be used. The two plans herewith illustrated will fill the bill in all respects. The one shown in Fig. 1 is two feet or more long, four inches high and eight inches wide. It is provided with a hinged lid, *C*, leaving a three-inch open space in front. The bottom slants toward the front, as indicated by the dotted lines at *A*. The plan

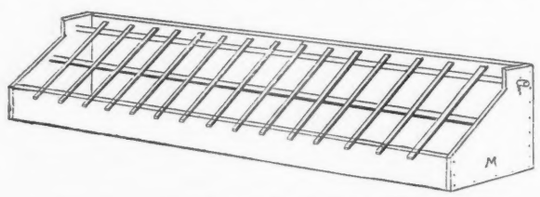
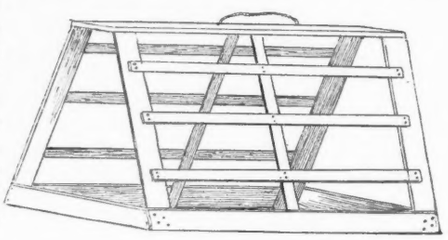


FIG. 2. FEEDING BOX WITH SLATTED COVER.

in Fig. 2 is more elaborate and is enough better to pay for the increased labor of construction. The ends, *M*, are eight inches wide, four inches high in front and ten inches at the rear. This box may be made as long as one likes. The slatted top explains itself. It is readily raised up to throw in the feed, and is intended for the use of full-grown fowls.

A LIGHT SHIPPING CRATE.

For shipping choice-bred fowls at any season of the year there is no more satisfactory coop, or one more easily and cheaply made than the one illustrated. Before the slats are nailed on the frame is neatly covered with some thin, strong, cotton cloth, like cheese-cloth. The bottom and top of the crate is not covered with the cloth, and separate three-cornered pieces are nailed on the ends. By covering the ends with cloth it makes fewer slats necessary and lessens the weight. The cloth keeps drafts from the birds, and shields them from the excitement which many strange sights would create. The bottom is tight, twenty by twenty-six inches, and the top is six by twenty-six inches. The connecting uprights are eighteen inches long and three inches broad. A rope handle to carry it by is put through holes bored in the top. The crate is made into two compartments by a cloth partition across the middle. Each compartment will accommodate a fowl, or for short distances two fowls. If dry this crate need not weigh over ten pounds.



CONVENIENT POULTRY SHIPPING CRATE.

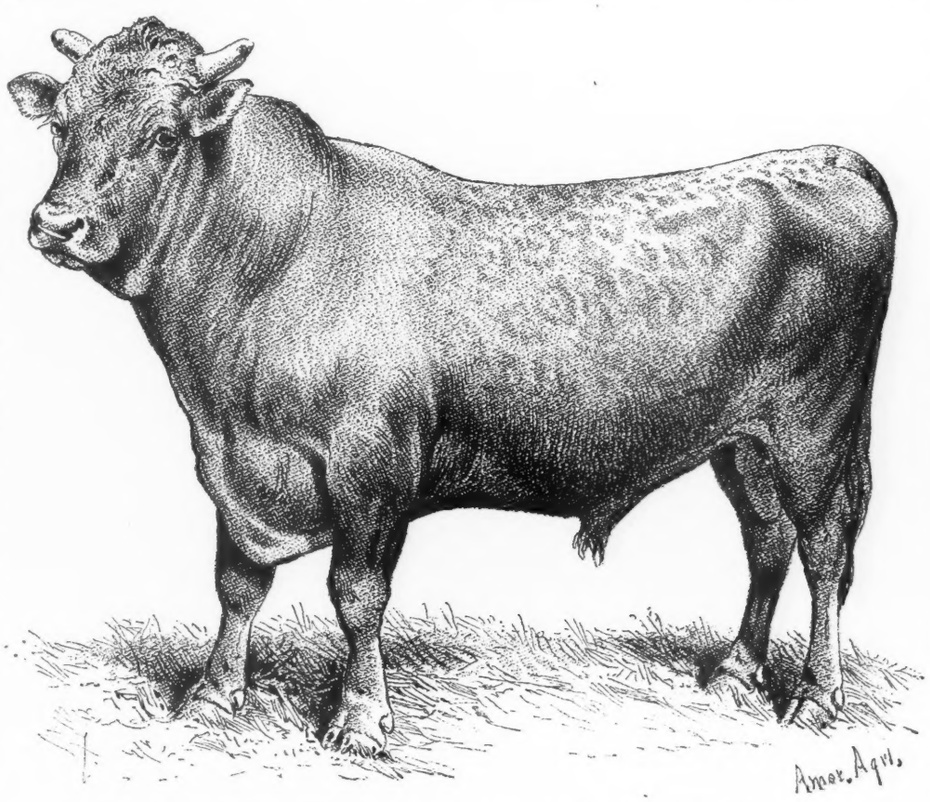
Buckwheat.—Don't be afraid to sow some buckwheat because it is said to be the lazy farmer's crop. That it may be so is its highest recommendation, for it is easily grown. But it is very prolific; comes in at a season of leisure; the grain is valuable for feeding all kinds of live stock, and a poor piece of pasture may be plowed and sown and seeded with grass and clover early in July and make a valuable field.

IDA OF ST. LAMBERT'S BULL 19169.

L. S. HARDIN.

It is often claimed that the bull constitutes the main feature of the herd, some breeders putting it as high as two-thirds its value. If we only knew just what the effect of the bull was on the offspring we would be able to determine just what his value was. The fact is that while some bulls like Stoke Pogis 3d, the full brother of the sire of Ida of St. Lambert's Bull, are beyond computation in point of value, others have proven actually detrimental to the herd. The breeding quality of a bull cannot be determined until he has been tried, and that means until his daughters have come to milk and have been tested. Even then it is much of a question as to the quality of the dams from which the daughters came.

When we come to consider the value of the bull and his influence on the future of the herd, we have in hand all the profound principles of breeding, and, unfortunately, also a large element of luck to contend with. This does not mean a blind trust in Providence, but that even under most conscientious and intelligent work there are such elements as "tricks" and lines of breeding that develop without and beyond the control of the breeder. Often what presents the most unpromising appearance develops into the best material. The best that can be done is for the breeder to spare no pains or expense to procure the best bull within his power and according to his best judgment. This bull must then be coupled with the best cows from large butter-yielding families, good care be taken of the offspring and the result patiently awaited. It will not do to be impatient, nor to trust to only one or two families in making the crosses. A bull can be tried on many families, and those he seems to "nick" best with should be encouraged. All of this is the field for the individual breeder to display his wit and talent in. In the subject of this sketch there seems to be nothing wanting. This splendid specimen of the Jersey breed is an inbred Rioter-Stoke Pogis, a scion of the famous St. Lambert family, of Canada; he is the property of Ayer & McKinney, of Meredith, Delaware Co., N. Y. He is of dark color, silver gray on the back and sides, long bodied, level backed, with a fine head and neck, short legs, broad hips, beautiful eyes, long tail, fine switch, and weighs 1645 pounds. His calves are all solid color, and bear to a remarkable degree the likeness of their sire. His owners state that none of this bull's daughters have yet come in milk. He, therefore, has not yet stood the crucial test of worth. There is everything in his favor, however, of pedigree and appearance of sire and offspring. As the name suggests, this bull is the son of Ida of St. Lambert, that officially tested thirty pounds two and a half ounces of butter in seven days. She also has the highest Jersey record for milk, yielding sixty-seven pounds a day, four hundred and fifty-five pounds a week, or eighteen hundred and eighty-eight pounds for a month. Her heifers are remarkably deep milkers. While there is nothing certain in breeding this pedigree, yet seeing that he is the son of Stoke Pogis 5th, Ida of St. Lambert's Bull looks like a sure winner.



THE FAMOUS JERSEY IDA OF ST. LAMBERT'S BULL.

It has now been some ten years since Mary Anne of St. Lambert's startled the butter-making world with her wonderful yield of thirty-six pounds twelve and a quarter ounces in a week. Mr. Valancey E. Fuller, her owner, and also the possessor of many members of the family, went to work to test all in his possession, and almost if not quite without an exception they came up to, or surpassed the fourteen pound limit, making the grandest array of tested cows in one family that the Jersey world had then seen, and so far as we know it still leads the list. During all these years of breeding and buying, public and private testing in this country and in England, nothing has been developed in the Jersey field greater than was accomplished by Mr. Fuller, taking his work as a whole. Nor has any family of Jerseys in all this time been able to supersede the St. Lamberts in popularity. With the present introduction and close work of testing machines, the owners of candidates for butter-making honors have their work greatly simplified, so that they can determine the value of young cows with ease and precision, thus encouraging them to test all the offspring and, by tabulating results, determine just what share is due to the bull.

The Jerseys have wonderful faculties as butter-makers, though other breeds are making good their claims for high honors in this field, so that there must be good and faithful work yet performed to hold the Jersey up to the reputation already won. For this purpose each breeder should consider himself a champion of the breed he represents, and spare no efforts to bring forth all the powers that his herd possesses. Those who are fortunate enough to own the choice animals of the breed carry an additional responsibility in this line, and should not shirk the labor that goes with it. We have seen some splendid efforts with the Jerseys in the past, while even better work has been performed of late, and some of it is in hand now, all going to prove that the art of breeding butter cows is seeking a higher level every day, and foretelling wonderful results yet to come. All of this is encouraging to the enthusiast and hopeful for the future of the dairy. The hard workers in the field of commercial dairying are watching with deep interest the battle of the giants, and they will render the award rich in honors and money values to the one that attains the lead and holds it.

Whatever may be said of our want of originality in discovering new methods of butter-making when compared with the achievements of the old country, yet in breeding science Americans are leading the world in developing the latent powers of the dairy breeds. This will be honor enough to satisfy our vanity, while in money value it leads all the rest.

The Farm Plat.—Every farmer should know the exact area of his farm, and the area of every division of it. There is satisfaction in knowing this, and the plat will be useful in keeping a record of operations during the year. Many farmers can "pace" a field and come "somewhere near" the actual contents, but this is not enough. A farmer who had depended upon the pacing measurement, found when he came to sell that he was five hundred dollars poorer than he thought he was. As the price was reduced this amount, it was equivalent, almost, to a loss. It was a disappointment. The plat may be used every year to keep a record of all crops. Make a copy

of the plat every spring by laying tracing paper upon it and tracing the lines. The year's work may then be laid out—corn in this lot, oats in that, and so on. If this be done accurately every year, and the plans be kept, they give a record of all crops, and succession or rotation of crops in a small space—a kind of one-leaf book-keeping that recommends itself to all farmers.

THE MODEL COW.

I. C. WADE, NORTH DAKOTA.

Imagine her standing before you. General style a wedge-shape, nearly the opposite of the beef type, or as the triangle to the parallelogram. Her quiet disposition is deceiving in a measure. For, let a stranger, a stray dog, an unusual noise, or anything startling appear, and her meekness is laid aside; her quiet eye flashes, her head is thrown up from its normal position of a slight decline, her back seems to become rigid, tail slightly elevated, and nostrils extended. She stands on the defensive, or is ready to take the aggressive if any danger threatens her calf. Now her appearance is that which is often called the nervous disposition. Every good dairy cow seems to be made up this way. But this nervous temperament of the cow should not be excited, or she will be short at the pail, and short in cream of what she does give; for the quiet, meditative way should be hers when she is making milk.

But to her points: We note a rather long, dishing head, large, prominent eyes, set well apart and down her face, large muzzle and mouth, small, feminine ear, with rich, oily secretories inside, small, tapering horn, if she is not of a polled breed, though it may be good sized at butt, wide jaws, throat well cut up, and free from dew-lap until close to the brisket, a long ewe-neck, sloping shoulders, thin at the top but opening wide down at the forelegs, so that they stand well apart, showing wide chest and plenty of room for heart action. Let us step to the rear and note the "business end" of the cow. The first point that receives attention is the immense udder, extending from away up in front to away up her back parts, the further the better, with plenty of loose skin in her twist. I place great importance on the udder being extended well to the front, with four well-placed, medium-sized teats, with two to four rudimentary teats; the skin should be loose and hairless; large, extended milk veins; crooked and large holes, for more depends on the size and numbers of these than on size of veins, for certainly the veins will carry off all the blood the hole will let back through to the heart. The famous cow "Jewel" has four on each side. My cow "Alma," holding the diploma for best dairy cow of the Northwest, has veins away up to her front legs, and four holes on each side. These veins are called by different names, but not so essential as to have the above characteristics. The so-called butter cord lies in the flank; it is a rounded cord, about the size of one's little finger to three times that size. I noted that all good butter cows have it largely developed. But I find upon investigation that it is simply a cord to assist holding up the abdomen, and has no connection with the udder. The escutcheon, *i. e.*, the hair in the twist and on rear bottom of udder which goes the wrong way is usually on good cows, but not always, should be continuous, for if broken it indicates the stopping of the flow of milk, or that it is not kept up through the year.

The back should be straight, but when age begins to tell the spine will sink somewhat by reason of the weight of the stomach and the incessant and large demands on the nerve force which runs through the spinal cord. Open back, *i. e.*, open, large vertebræ, indicates large nervous force. This is of greatest importance, for on a good back hang all the law and the profits. It not only has to hold up the large abdomen but is the insulator through which flies the nervous force.

Note the wide hips and pelvic bones, tail large at its juncture but tapering down to a fine point below the hocks, with small bulb of oily matter at point, and with a good brush. These may seem of small importance, but each one has its special bearing on the making of a good dairy cow. Large barrel, with ribs well sprung, flat, and space between them, open twist, thin, bony thighs, small, feminine legs. Thrown over all a loose hide, golden color, covered with thick hair—the more to the square inch the better—and you have a type of a dairy cow of which, if bred and fed aright, you will have no trouble in getting a good specimen.

Always breed to a dairy type of a bull, and from the time the heifer is born always feed for a butter cow. She should be bred so as to come in from twenty to twenty-four months old, for nature sets at work those qualities that provide for the forthcoming young early in its life, thereby giving an impetus to the points toward milk instead of beef. Then feed those foods that will produce milk instead of beef. In fact study not only to properly breed but to develop your animal. It is a science worth studying, for no animal will give such quick and remunerative returns as a good dairy cow.

FEEDING COWS FOR BEEF.

ANDREW H. MERRILL, MASSACHUSETTS.

What constitutes good beef, good mutton, and good poultry? It is the sweet, juicy, tender lean meat. But a small portion of the fat of beef or mutton is eaten. Look at the bushels of butcher's waste in any market and see what a large per cent of fat it contains. And the marketman will tell you that very fat corned beef is "slow sale." I have never known of an instance where prize beef gave good satisfaction. On the contrary, it has been very unsatisfactory to both the butcher and the consumer. How shall we make good beef of our unremunerative dairy cows? My theory and practice may be illustrated as follows: We will take for an example a gargety cow—the worst in the list. There are but few cases of that class which cannot be controlled by proper feeding and a judicious use of saltpeter. In a bad case I would say do not feed corn meal or oil meal. Feed wheat bran, mill-feed, ground oats, or any other easily-digested, milk-producing food; and give night and morning a great spoonful of saltpeter (if so much proves to be necessary) dissolved and mixed with her grain rations. For feeding a healthy animal I would add to the above list gluten meal and a small ration of cotton-seed meal, omitting the latter during the last two or three weeks previous to killing. Well-cured, early-cut clover hay is preferable to any other dry feed. Turnips and cabbage can be fed quite freely during the earlier stages of meat production, without injury to the milk or butter, if fed ten or more hours before milking, as during that time her breath, skin, and kidneys will have eliminated all the odor from her system. Give milk-producing, muscle-sustaining food. Feed only that which is sweet and free from mold.

As a rule I think it better to keep the beef cows farrow and in milk; and with good keeping, we get a fair quantity of extra good milk, the cows often paying for their keeping up to the last day. In winter, for a few weeks previous to killing, give the animal enough beets—sugar or long blood-red preferred—to keep her bowels in a healthy condition; it may take half a bushel or not more than half a peck a day. Never overfeed; never spoil the appetite. Undigested food makes no blood; imperfectly digested food makes impure blood, and impure blood cannot make good meat. A little saltpeter tends to allay fever—which is often an attendant of high feeding—and stimulates the kidneys to throw off any impurities from the blood. The animal when killed should be in a thriving, gaining condition, not on the shrink. Remember that the juiciness of the meat depends largely upon how the cow was fed for two or three weeks before killing, and that the flavor depends upon what it was fed for the two or three days previous to killing. Our sea-coast butchers do not allow salt marsh hay to be fed to their animals for a few days before killing; and turnips are not allowed anywhere. A man who was an army butcher during the war said that they turned some cattle into a wheat field in Virginia one night, and some of the cattle were killed the next day, but that the meat couldn't be eaten by any one but a Frenchman; and, on examination, it was found that field garlics were growing among the wheat, and the cattle had eaten freely of them. There can be no hard and fast rules for feeding; animals differ, and the same animal requires different feeding at different times. Before turning out, in changing from dry feed to pasture, give in the morning all the hay they will eat, and for their grain ration give mostly corn meal—scalded if convenient—continuing the daily rations of meal for three or four weeks, and the hay as long as they will eat it. Let the change from dry to green be gradual. A full ration of immature grass is as bad for a cow as green apples for a boy. For a butter-producing cow in dog days, I prefer ground oats to any other one kind of feed. It makes sweeter and firmer butter than most other kinds of feed. Through the summer feed primarily for milk and butter, but always keep the cows gaining in flesh and yet not too much in fat.

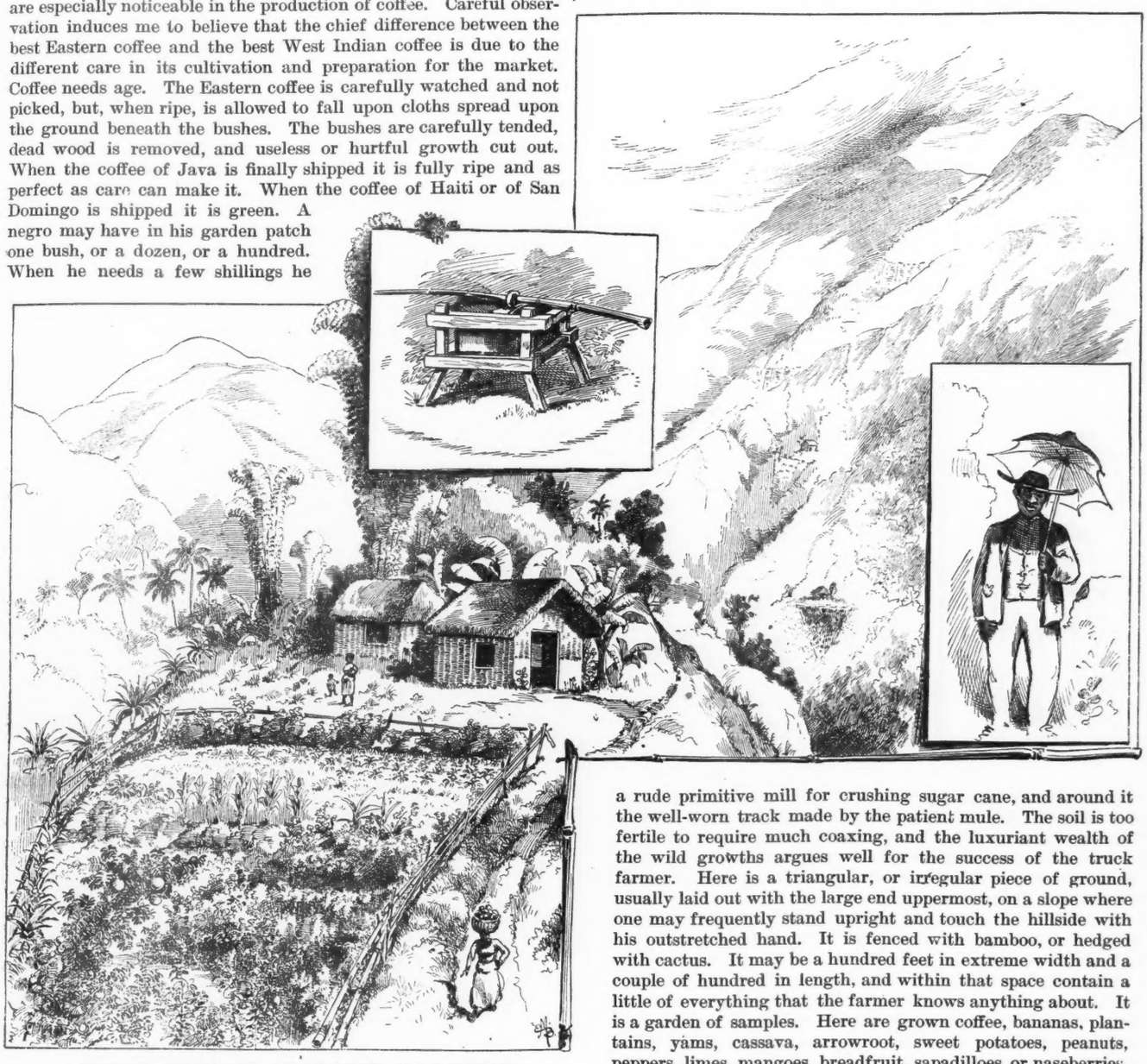
Pointers With Potatoes.—There seems to be an agreement among all the results of tests with potatoes that good, average-sized, well-ripened tubers need to be used for seed; that they need to be planted with plenty of room for healthy growth, and kept clean of weeds and bugs. Beyond this there are differences of opinion, doubtless due to variety used, kind of soil, and character of the season. There is very little exact mathematics about potato-growing.

MARKET GARDENING IN THE WEST INDIES.

EDGAR MAYHEW BACON, JAMAICA, W. I.

The life of the truck farmer of the West India Islands is so different from that of the small cultivators in the United States, or the peasant agriculturists of Europe, that it merits special study. Although each one of the different islands presents some peculiar conditions which serve to modify the general features, yet the climate, the fertility of the soil, and the race habits of the people combine to produce a general similarity of character throughout the Antilles.

The abandonment of many of the old plantations and the inefficient way in which the present proprietors are cultivating their crops are especially noticeable in the production of coffee. Careful observation induces me to believe that the chief difference between the best Eastern coffee and the best West Indian coffee is due to the different care in its cultivation and preparation for the market. Coffee needs age. The Eastern coffee is carefully watched and not picked, but, when ripe, is allowed to fall upon cloths spread upon the ground beneath the bushes. The bushes are carefully tended, dead wood is removed, and useless or hurtful growth cut out. When the coffee of Java is finally shipped it is fully ripe and as perfect as care can make it. When the coffee of Haiti or of San Domingo is shipped it is green. A negro may have in his garden patch one bush, or a dozen, or a hundred. When he needs a few shillings he takes it from his coffee bushes. His children, who pick the berries, are not more careful than are children elsewhere. As a consequence, an unripe and undesirable article is placed on the market, as the best that the West Indies can produce. Wherever there is plenty of land to be had, and living costs little, similar methods are repeated in the production of other staples.



WEST INDIAN MARKET GARDENS.

In the more mountainous islands the negro loves to choose inaccessible hillsides where a goat might hesitate to trespass, and where certainly the foot of the tax collector is never likely to stray. He frequently chooses the conjunction of two mountain spurs, over one of those ravines, the course of whose ever-present brook is marked by tropical forest trees, interspersed with the plumes of the bamboo and the broad, wild plantain leaves. Or, lower down, on some sheer slope he settles, where from a distance his little place looks as though it were suspended by the thread of a path that leads down to it. In such a place the peasant builds his hut; making the frame and basket work, or wattles, of bamboo, and the thatch of banana leaves or palm. The hard earth is his floor and sleeping place. If he owns a bedstead it is a great mahogany affair with turned posts and a canopy, quite too fine to sleep in, and used as a sort of an altar to family pride. A trunk, or box, or other repository contains the Sunday suits of the man and his wife and "pickaninnies." Broadcloth and silk—no less will do—with a silk hat and umbrella transform the half naked negro and negress to prosperous looking citizens. Outside, of this mountaineer's cabin we may find a rude primitive mill for crushing sugar cane, and around it the well-worn track made by the patient mule. The soil is too fertile to require much coaxing, and the luxuriant wealth of the wild growths argues well for the success of the truck farmer. Here is a triangular, or irregular piece of ground, usually laid out with the large end uppermost, on a slope where one may frequently stand upright and touch the hillside with his outstretched hand. It is fenced with bamboo, or hedged with cactus. It may be a hundred feet in extreme width and a couple of hundred in length, and within that space contain a little of everything that the farmer knows anything about. It is a garden of samples. Here are grown coffee, bananas, plantains, yams, cassava, arrowroot, sweet potatoes, peanuts, peppers, limes, mangoes, breadfruit, sapadilloes or naseberries, and as many other fruits and vegetables as can be crowded together. If there is a spot suited to the cultivation of pineapples those, too, are produced. One or two cocoanut trees may add variety which often includes the broad-leaved castor-oil plant, and the long spikes of the aloe. Altogether the garden of the peasant is a thing to be marveled at, a very *olla podrida* of a plantation.

In this spot of earth which he calls his own—not always with a clear title to ownership, however—the poor West Indian forgets that the world has agreed to call him lazy. Early and late you find him at work, "tickling the earth with a hoe." He plants a little and harvests a good deal. If any one desires to know what a wife and children are good for he should go to him. He can tell. The sable sharer of his joys and sorrows and joint owner of the

cabin and garden "totes" the produce to market, it may be eight or ten miles, on her head. She is built on the model of an old Dutch yacht, short and broad in the beam. She can travel mile after mile with a strong, swift, swinging stride, making no motion above the waist, and carrying fifty or sixty pounds weight balanced on her head. The children learn to work early. Every one has some task. To pick coffee, grub yams, dig ground nuts, or husk cocoanuts, are parts of a never-ending round of work. There is, perhaps, a little border of cotton in the field. It is planted along the fences, some bushes high and others low, the white tufts like rabbit tails cropping out all over. Many a pound of dirty cotton have I seen brought in, a pound or two at a time, to the counter of some local buyer and sold at one or two cents a pound. Of course its whiteness and purity are not increased by careless handling and being trodden under foot by the juvenile pickers. Here again, as with the coffee, care in picking would make a wonderful difference in the market value of the product.

Similar conditions prevail in most of the West India Islands, especially the larger ones. The wealthier proprietors give most of their attention to sugar cane, bananas, or nuts, producing these on plantations of hundreds and sometimes thousands of acres. The cane is grown for the manufacture of sugar and rum, which are export staples. In Barbados the situation is slightly different, owing to the density of population and the monopoly of land by cane growers. The population is about 1,030 souls to the square mile. There is a total acreage of 106,470, of which 100,000 acres are devoted to canes, and the remainder largely used for roads, buildings, etc., or lying in inaccessible ravines and cañons. Therefore, the negro is a laborer for some one else, tilling the cane fields and working in the mills. He seldom has his own ground, or makes more than a quarter of a dollar a day in his labor for others. The island of Barbados is in a higher state of cultivation than any of the West Indies, but it has fewer peasant proprietors.

The productiveness of West India market gardens is astonishing. Arrow root produces about 10,000 pounds to the acre, and it is calculated that the yield in starch from this will be 2,000 pounds. Yams give about 8,000 pounds to the acre, and the cassava nearly the same. Yams are worth usually from two cents to two and one-half cents per pound. The Lucea yam, grown on the west end of Jamaica, has been largely exported to Panama while the canal has been in progress. Sweet potatoes are worth usually about half a cent less than yams. An acre will produce 30,000 pounds of these. The ground-nut produces 2,000 pounds per acre. Here is no winter to annoy the farmer; no frosts to blight his crops; no fire needed for warmth, and little for cooking, so much of his food consisting of fruits. If he works at any distance from his cabin he takes a smoldering bit of torch wood with him. Where little clothing is used it costs little. He finds his small farm sufficient for his wants, and dreams of nothing better than the slopes of his mountains. [Such an ideal West Indian mountain farm is depicted in our illustration engraved after original sketches drawn by our correspondent.]

SECTIONS AND THEIR ADJUSTMENT ON THE HIVES.

W. Z. HUTCHINSON, MICHIGAN.

Only those who have kept a dollar-and-cent account with their bees fully realize that labor is the most expensive factor entering into the cost of honey. Let us suppose that a man who cares for a hundred colonies of bees, by complicated methods secures a good yield,—one somewhat increased by his laborious manipulations. Now, if by improved methods and fixtures he can manage one hundred and fifty colonies equally as well with no greater expenditure of labor, it is evident that his profits would be greater, even though the new departure did not bring the yield per colony quite up to that of the old system. Of course, there is a limit to the increase of colonies, made possible by lessened labors, resulting from the adoption of improved methods and fixtures. The further we advance in this direction the nearer and clearer looms up the spectral head of "overstocking."

But it is a pleasure to note that the fixtures and methods of to-day are superior to those of a few years ago. In this matter of sections and their management, the old plan of putting them on the hive and taking them off one at a time has been wholly discarded. A few beekeepers still manipulate them by the wide frame full, but most of them have adopted some sort of a case, or a super by means of which twenty-five or thirty sections can be handled at once, and with which "tiering-up" may be practiced. The old, cumbersome, complicated, laborious, side-storing system is no longer in vogue. It is perfectly safe to say that "top storing" and "tiering up" with some kind of a case, crate, or rack, furnishes the best method now known for securing comb honey; that it is the only one which enables the beekeeper to handle a "honey shower" with perfect ease; "rattling" the sections on and off the hives in a rapid, business-like way. It is true that "tiering-up" has been condemned, but principally upon the ground that the inability to easily and rapidly contract the surplus apartment to less than a whole case results in a larger number of unfinished sections at the end of the season. If this practice enables us to care for more bees, and it certainly does, and we thereby secure more finished honey in the aggregate, why grumble at the unfinished work thrown in?

For making sections, basswood is used to a greater extent than any other wood. It is white, it is readily obtainable in all parts of the country, while it possesses the elasticity needed in one-piece sections. Its faults are that it shrinks and swells excessively, becomes mildewed and discolored very easily, and any honey dropped upon it soaks in and leaves a stain. White poplar is the best wood for sections. It is whiter than basswood, very hard, does not shrink or swell readily, and is not stained by contact with honey, or easily soiled by handling. Yet it lacks the elasticity necessary in one-piece sections. There are no handsomer or better sections than the four-piece white poplar. The only valid objections against them are that they cost more, and that more time is required in putting them together. True, I have been pleading for time-saving fixtures, but there must be a distinction made between the hurry and bustle of swarming time and the leisure of a winter evening; or between the time of an experienced apiarist and that of some boy or girl who can put together sections. The objections to the one-piece sections are that they cannot be made of the most desirable wood, that, as usually made, they do not remain "square" when folded, and that they are made with "naughty" corners that sometimes gouge into the honey when crating it or removing it from the crate. When separators are used the latter objection is removed. The reason why the so-called "naughty" corner is always found upon the one-piece section is because if the opening is cut clear through to the side piece the small film of wood left to hold top and side bar together is more likely to break. When the openings extend clear across, as with the four-piece sections, the combs are more completely built out and attached to the top and bottom bars. The top and bottom bars of sections ought to be three-eighths of an inch narrower than the side bars. Usually they are made too wide, leaving too narrow openings between them. In fact, the one-piece sections, although possessing some faults, are cheaper and can be put together quicker than the four-piece which cost more but are faultless. My preference is decidedly the four-piece sections.

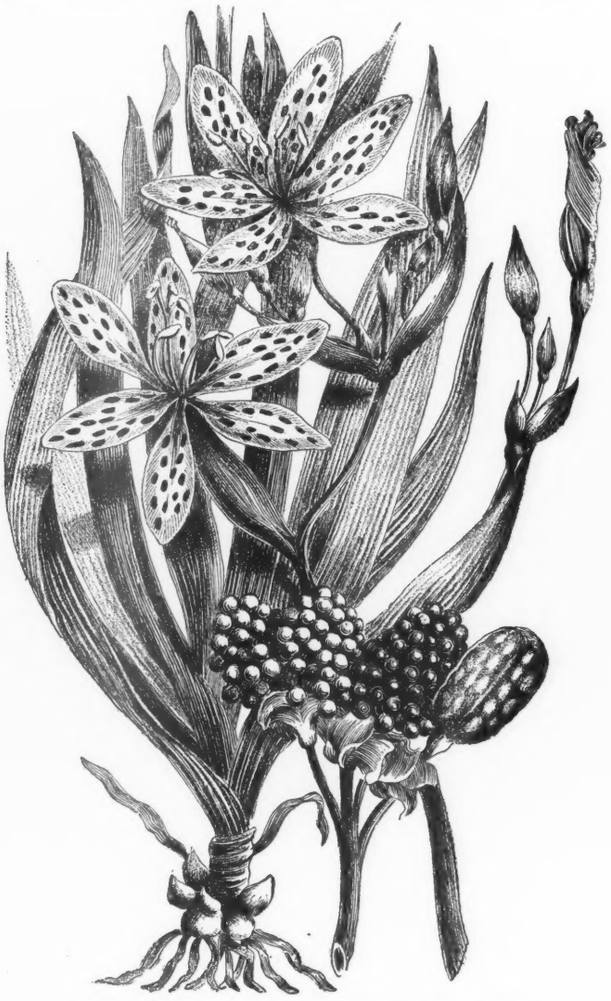
If separators are not needed, there is no kind of case or super better than the old style Heddon case. It is cheap, substantial and perfect. If separators are desired, there are two styles of cases between which to choose; the T-super and wide frame, one tier of sections deep, and placed in a case. The only advantage possessed by the T-super as compared with the Heddon case is that it allows the use of separators, while the wide frames protect the outside of the sections; and for some reason their use also lessens the proportion of unfinished sections. The bees follow the frames begun on out to the ends before spreading out laterally when the flow is not abundant, so that three or four frames are sometimes entirely filled, while those outside are scarcely touched.

To sum up: if separators are not needed, the old style Heddon case is excellent; if they are desired the T-super will allow their use (wooden are preferable in the T-super) and the cost is much less than for the wide frame case, which, with this separator, is the most perfect method of adjusting sections on a hive, its only drawback being its cost.

Sugar Beets in America.—If we may judge from the way the question of sugar-beet culture is being taken up in this country, it is evident that the Middle Prairie States intend to grow their own sugar. It first needs to be fully demonstrated that the sugar beet can be successfully grown with a high percentage of saccharine matter. After this comes the important question of manufacture, and this involves the idea of co-operation. There needs to be enough of beet roots grown in any neighborhood to support a sugar factory, with a reasonable expectation that the supply will not fall off in a few years. A sugar-making outfit is expensive. The best way would be for the growers to be stock-owners in the factory. The experiment stations need to take the lead in this matter, and this they are now doing.

THE LEOPARD FLOWER, OR BLACKBERRY LILY.

This handsome flower is not, as its popular name leads to suppose, a lily at all, but belongs to the Iris Family. Its scientific name, *Pardanthus chinesis*, is derived from *pardos* leopard and *anthos*, a flower — hence, leopard flower; and *chinesis* means of China. The Chinese Leopard Flower was formerly very common in gardens, but like many another deserving plant has given way to the universal craze for novelties. The stem grows three or four feet high, branches at the top where it bears regular flowers of an orange color and abundantly dotted with crimson or reddish-purple spots. One great merit of the Leopard Flower is that it is late flowering, being in bloom from midsummer to September. After the pretty flowers have faded the capsules grow on and enlarge, and when quite ripe the walls of the capsules break away and curl up, leaving a central column of shining, black-coated seeds, looking so much like a well-developed, ripe blackberry, that the fruit, if not so handsome as the flower, is quite as interesting, and shows that in



BLACKBERRY LILY, FLOWERS, FRUIT, AND PLANT.

this instance it does not require any effort of the imagination to see the applicability of perhaps its most common name—the Blackberry Lily. The plant is hardy in most of our Northern States, but the French florists say that it does not endure the winters of Paris without protection. It is a tuberous-rooted, herbaceous perennial, requiring a rich, sandy loam soil and a sheltered situation in winter. It is propagated in spring by seeds, or by division of the roots. A plant together with its flowers and fruit is seen in our engraving.

Ornamental Flower-Beds.—Useful and ornamental beds for the lawn or garden are easily obtained by simple and tasteful combinations of common garden plants. Nothing is more useful for this purpose than sweet alyssum. A round or oval bed, with a canna, caladium, or tritoma for the center, surrounded by a mass of this delicate annual is very pretty; or, if a dash of color is preferred, a few seedlings may be interspersed. Any of the blue lobelias or forget-me-nots will do if that is the color desired. Rose or scarlet phlox and mignonette form pleasing combinations, and may be used to advantage either with or without the alyssum. The fact that the alyssum grows gray with seed pods in midsummer is no objection to using it, for if sheared down occasionally it will start up again, and grow and bloom with fresh vigor until very late in the season.

ACHIMENES.

These interesting plants, belonging to the natural Order *Gesneraceæ*, are very profuse bloomers, if treated properly. They require plenty of heat, and, in fact, can be grown successfully only under glass. Under favorable conditions of heat and moisture, however, they are readily grown. They must be started and grown in stove heat until they commence flowering, when they may be removed to the conservatory or greenhouse. Batches of tubers may be started in heat at intervals early in the season, so as to give a succession of blossom. Shake each variety out of the old compost and insert separately in light, sandy soil; water sparingly at first, but when active give them more frequent and regular supplies.

BUNCH OF IMPROVED ACHIMENES.

When the shoots are about two inches high the tubers may be transplanted to pots, pans or baskets in which it is intended to grow them, using fibrous peat and leaf-soil in equal proportions, with about a sixth part of decomposed sheep or cow manure, and sufficient silver sand or broken charcoal to make the whole porous and light. Thorough drainage is indispensable, and a layer of rougher soil or sphagnum (peat-moss) should be placed over the potsherds to prevent the loose soil stopping the drainage. Place the pans as near the glass as possible and shade from bright sunlight. Give liberal supplies of water, with occasional doses of liquid manure; and as the shoots lengthen they may be pinched, to induce sturdy growth and a larger number of flowering branches. Neat stakes should be placed at each stem and kept well tied, arranging the stakes as symmetrically as possible so as to insure an even outline, but not allowing them to be seen. Light syringing with clear water, morning and evening, is beneficial. After the plants have done flowering they should gradually have less water as the stems

and foliage decay, and a light, airy situation is needed to mature and ripen the tubers. When the tops are quite dead they may be removed, and the pots stored on their sides in any warm, dry corner, where the temperature will not fall below 50°, keeping the plants quite dry until the time of starting again

There are several methods of increasing these plants: By cuttings; these need not be cut off at the joint, as they will root from any portion of the stem. Insert them thickly in well-drained pots of sandy soil—say a mixture of equal parts of peat and sand—and place in bottom heat: By leaves, which should be severed close to the main stem and pricked into pots of similar soil to the cuttings, placing all the petiole (leaf-stalk) below the surface, standing the pots in bottom heat: By scales from the corms, which should be carefully rubbed off and sown like seeds in pots or pans of the same compost as used in the other methods, barely covered with sand, and placed in bottom heat: By seeds, which are very small, and consequently require to be carefully sown. The pans must be thoroughly drained and filled nearly to the rim, leveled and well-watered with a fine rose, after which the seeds should be thinly scattered, covered very lightly with sand and placed in a shady position. Keep moderately moist and apply water very lightly so that the tiny germs will not be disturbed. Place a sheet of glass over the seed pans. When the seedlings are large enough to handle they may be pricked off and afterward treated like rooted cuttings. The best time for all modes of propagating is early spring. Our illustration shows a cluster of flowers of some of the most improved varieties.

PLANTING WHITE LILIES.

In most instances the causes of failure with *Lilium candidum*, the most beautiful of all lilies, can be justly attributed to their being planted at the wrong time. While most of the species can be planted either in spring or autumn with surety of success, the *L. candidum* can only be planted or removed in August or September with any certainty of its flowering the following season. These bulbs have two seasons of growth, the more important of which is the autumnal, as upon this the flowering the following season depends. The flowers are produced early in July, not infrequently in June, and the bulbs will be ripe the first week in August, unless the season should be a very wet one, in which case they should not be taken up before the 15th. As their period of rest is a very short one, replanting should not be long delayed. The bulbs, whether in or out of the earth will commence their growth at their regular period, and all the growth made out of the ground is at the expense of vitality. If they are kept long in a dry state, as they frequently are for purposes of sale, it will be years before they will recover their strength sufficiently to flower well. Whenever possible the bulbs should be taken up and replanted the same day.

REMEDY FOR CUCUMBER ENEMIES.

DR. A. G. CHASE, KANSAS.

The worst enemy the gardener has to contend with in growing cucumbers is the striped bug, of which we have two kinds; a yellow spotted bug with greenish tinge, larger than his cousin just mentioned; a beetle smaller than either of the others, with coppery green wing covers, dull red across the back, and a jumper equal to the flea, always alighting on his back, when he "plays possum" as long as he hears any disturbance; and last but not least the detestable squash bug. The successful gardener must be a man of close observation. He must carefully study the habits of all insect pests, and this knowledge will often enable him to defeat them. The Dalmatian insect powder, or the California Buhach, if thoroughly applied, will scatter all of the enemies of the cucumber plant and nearly all other garden pests; and they have the marked advantage of not being poisonous in any degree to human beings. But they must be used after every rain and after every heavy dew, as moisture destroys their insect-poisoning properties entirely.

Thirty odd years ago a writer in the AMERICAN AGRICULTURIST stated that "onion tops scattered between the cucumber plants would drive away the 'striped bug,' renewing them every few days." I have used this remedy frequently since, and I can add my testimony to its truth. But we often forget to renew them, and the little penitentiary birds are quick to perceive our neglect. Hence I have adopted this plan; I make my hills large, so there will be at least six inches between the plants, and then scatter three or four onion sets (top sets) through the hill soon after the cucumbers are planted. Another very important point in fighting these pests is to keep the surface under and around the plants perfectly smooth.

All of this class of insects have the habits of the quail and partridge in hastily concealing themselves. They will either hide or fly on the slightest appearance of danger, and I am pretty sure they get the warning from sound. Hence they will seek the hills that offer them the best opportunities for hiding. The onion has no terrors for the squash bug from the fact I suppose that he thinks it a rose or other sweet-smelling flower compared with his own odor. If possible plant a hill or two of summer squash in proximity to the cucumbers, and this bug will not molest the latter much. If this is not done the vines must be carefully searched each morning until the vines get to running smartly, and even then the utmost vigilance will be needed if these bugs are at all plentiful.

There is little difference between these two kinds of insect powder, provided they have not been kept in stock too long. The Dalmatian is the cheaper, but the Buhach is a more apt to be fresh.

WHY CABBAGE FAILS.

F. PARK, NEW YORK.

For a good crop of cabbage a deep, rich loam is necessary, and for a heavy crop it must not succeed other than grass. The best crops are secured by turning under sod about the 1st of June, and about the 1st of August spreading liberally well-rotted stable manure, and working it in with the cultivator. In cabbage-growing districts this method will give an abundant crop of large and perfect heads. With good seed, of the best strain, under these conditions, fully ninety-five per cent of the plants set should produce marketable heads. In fact, I have seen better results than this. On the contrary, take plants grown from the same stock seed, set them on a light soil that has been heavily cropped for a succession of years, the vegetable matter being pretty thoroughly exhausted, the climatic conditions being equally favorable, this soil would not yield half the crop of that of the former. Again, take plants from the same seed-bed, of the same stock, set in a field when the atmospheric conditions were favorable, say just before a heavy rain, and an equal number of plants just after the rain, if it comes off very hot and dry after the planting, the result will show two crops so different in appearance that even an expert, not knowing the facts, would say there were two distinct kinds of seed sown—the one good, the other poor.

Cabbage more than any other plant is injured by receiving a check in transplanting. Plants set just before a heavy rain will not receive a check, because the earth becomes so thoroughly packed about the roots that the air cannot reach and destroy the feeding roots, while those set after a rain may suffer because the earth is not pressed firmly about the roots. To guard against this the better plan is to puddle the plants and to set them in clear weather, when there is no necessity for haste and the work can be perfectly done. This plan I have never known to fail, and I believe more failures are due to improper transplanting than to all other causes combined.

ICELAND POPPIES.

G. A. WOOLSON, VERMONT.

Among the many beautiful species and varieties of poppies, so popular at the present day, *Papaver nudicaule*, the Iceland Poppy, should rank high as an acquisition to any garden. There is something quite unique about the small crushed-satin flowers, so delicate in fragrance and different in color from the poppies in general cultivation. I expected scarlet, but a copper color appeared instead, and toned the brilliant yellow of neighboring plants acceptably. The latter, by the way, are as suggestive of overgrown buttercups as the white ones are of anemones. The foliage is fern-like, and the plants are perennial. Last year my bed of poppies blossomed until November. No protection was given the plants through the winter, but by the middle of April the bed was green with thrifty plants, full of strong buds, which were in no way disturbed by a belated snow-storm. Downy poppy buds pushing their way out of heavy snow is surely an unusual sight in Vermont gardens, and prove this kind the pluckiest poppy grown.

The Mission of Weeds.—No one should disclaim against weeds. They are certainly troublesome to the careless farmer, but when rightly considered are a gentle reminder by beneficent nature that we are neglecting work which should be done. And as virtue is its own reward, that of careful attention to business opportunities always pays the farmer handsomely. Weeds are thus an inducement for the farmer to do his whole duty in the thorough cultivation of the land, which would be apt to be neglected otherwise.

THE GLADIOLUS.

C. L. ALLEN, LONG ISLAND.

The genus Gladiolus consists of more than sixty species, chiefly natives of the Cape of Good Hope, some of the more hardy species being indigenous to Central and Southern Europe. In the species may be found a great variety and range of colors, varying from the most intense scarlet to pure white, from clear rose to pure yellow and bright purple. The habits of the species are as varied as their colors; some delicate and light, others strong and robust, with constitutions adapted to any climate where ordinary flowering plants can exist. From these species some of the most remarkable hybrid forms have been produced, and in no branch of horticulture or floriculture has the skill, the zeal and the perseverance of the hybridizer been so liberally rewarded. So marked has been the change that none of the original species can be found excepting in botanical collections. To the late Louis Van Houtte, of Ghent, Belgium, we are indebted for the first cross between the species, the great improvement in the flower, and for the vast number of varieties under cultivation. The first cross was between *G. psittacinus*, a native of Africa, and *G. cardinalis*, a scarlet flower, also a native of the Cape, the result of which was the well-known tribe of Gandavensis, which in turn became the parent of all the garden sorts bearing its name. The hybridization of any popular tribe, when it is attended with so little labor in proportion to the results produced as in this genus, is speedily carried on to an extent which renders characteristic distinction indefinable; and perhaps the introduction of the numberless names which necessarily arise out of such a circumstance is to be regretted, as occasioning difficulty and labor beyond what most cultivators are disposed to submit to. For the purposes of sale, however, and also to enable the producer to recommend very particular sorts to dealers and amateurs, it is essential that such varieties as are at all deserving of being perpetuated should have a distinctive name.

TYPES OF GLADIOLUS.

One of the most interesting features in the cultivation of the gladiolus is that every cross between well-known varieties tends, in almost every case, to improve not only the beauty of the flower but the vigor of the plant. There is no difficulty in raising new and choice varieties of gladiolus from seed, the only mystery is that one can with so little trouble and expense produce flowers that will give such intense satisfaction and pleasure. It is no more trouble to grow the more beautiful gladiolus from seed than it is to raise onions. Prepare the soil and sow the seed of the former in precisely the same way you would the latter to get a good crop. Work the soil often; keep clean from weeds; take up the bulbs after a frost, or before, if they show, by the drying up of the foliage, signs of ripening; store them in a dry cellar, free from frost; plant them out again the following spring in good soil, covering the bulbs say two inches, and if the season is at all favorable nearly all will bloom. The results of hybridization will also be plainly manifest, to the great delight of the amateur, as in a bed of a thousand seedlings there will not be two of a kind; in shape, color or markings there will be a plain distinction. Another pleasing feature will be that there will not likely be anything poor, but rather a probability that a variety superior to any before seen may be produced. Recently two new types of gladiolus have appeared, the first being known as Lemoine's hybrids, a cross between some of the varieties of *G. gandavensis* and the species *P. purpureo auratus*, which is conspicuous for the large purple blotches on the two lower petals. The colors or markings of the flowers of this type are simply wonderful, rivaling some of the rare and strange orchids. The flowers are by no means as well shaped or arranged, neither are the spikes as showy for garden or house decoration, but the intensity of color, to be seen on close inspection, makes a plant well worthy of general cultivation. It was claimed, when introduced, that this type was perfectly hardy. Here it has not proven more so than the *G. gandavensis* type. It is, however, more rapidly increased, and the bulblets not infrequently flower the first year. This type is more readily increased from seed than others. Last year from seed sown about the first of May in the open field there were produced plants that flowered in September, not an occasional one, but sufficient to show that under favorable circumstances a very large per cent. would flower the first year, which I have never known any others of the type to do. This section also increases more rapidly from

bulblets than the others; besides, the better varieties produce both seed and bulblets as freely as the better sorts, which is not the case with the *G. gandavensis* section. This is probably due to the fact that cross fertilization has not been long carried on, and the varieties are not far removed from the species.

Mr. Lemoine has also produced another new strain, a cross between the *G. gandavensis* type and *G. Saundersii*, a large crimson flower, spotted with white. This cross promises great results; the flowers are very large, well-opened and arranged, making a very showy spike. Thus far there is almost an entire lack of white, and the flowers have not as much substance as some of the other types. *G. Colvillei alba*, a variety popularly known as "The Bride," is a garden hybrid between *G. cardinalis* and *G. tristis*; the flowers are small, pure white, excepting very light markings on the lower petals, forming very graceful spikes. This variety is largely used by florists, as it forces readily and is very useful for cut-flower decoration. It cannot be used to good advantage in the border unless planted in a dry situation and thoroughly protected against frost. This bulb is mostly grown in Holland as a first crop, to be followed by hyacinths or tulips, and is produced very cheaply. The bulb is not larger than that of the crocus, and increases very rapidly. The Gladiolus for decorative purposes during the winter season has been considerably used lately. For this purpose selection should be made from the kinds that come earliest into flower out of doors, and at the same time such as have the most positive colors and best defined markings. [In the white central, and the spike on the right hand of our engraving, are represented most perfect types of modern hybrid gladiolus; the spike on the left hand illustrates *G. Saundersii* and the upper one in the group shows *G. Lemoinii*.]

FIG. 1. WINTER EGGS OF THE HOP PLANT-LOUSE, AND SHRIVELED SKIN OF THE SEXUAL FEMALE WHICH LAID THEM—ENLARGED.

FIG. 1. THE HOP PLANT-LOUSE-STEM-MOTHER, WITH ANTENNA ABOVE—ENLARGED.

THE HOP-PLANT LOUSE.

PROF. C. V. RILEY.

This insect threatens to become serious again in the State of New York. At the request of the editor I have condensed some of the more important facts connected with its life history and the best means of controlling it, from a special circular shortly to be sent out by the Department of Agriculture:

Life History.—Wherever it occurs, whether in England or on the continent of Europe, in New York, Wisconsin, or on the Pacific coast, the hop-plant louse (*Phorodon humuli*) has substantially the same life-round. The eggs are laid in the fall on different varieties and species of the plum, both wild and cultivated. They are small, glossy, black, ovoid and are attached to the terminal twigs, especially in the more or less protected crevices around the buds (Fig. 1). From an egg hatches in the spring, about the time when the plum buds begin to burst, a stout female plant louse known as the stem-mother, which differs from the summer individuals by having shorter legs and shorter honey-tubes (Fig. 2). She gives birth, without the intervention of the male, to living young, and this method of propagation continues until the last generation of the season. The second generation grows to full size and gives birth to a third, which becomes winged (Fig. 3), and develops after the hops have made considerable growth in the yards. The winged lice then fly from the plums to the hops, deserting the plum trees entirely and settling upon the leaves of the hops, where they begin giving birth to another generation of wingless individuals. These multiply with astonishing rapidity. Each female is capable of producing on an average about one hundred young, at the rate of three per day, under favorable conditions. Each generation begins to breed about the eighth day after birth, so that the issue from a single individual runs up, in the course of a summer, to trillions. The issue from a single stem-mother may thus, under favorable circumstances, blight hundreds of acres in the course of two or three months. From five to twelve generations are produced in the course of the summer, carrying us in point of time to the hop-picking season. There then develops a generation of winged females (sexuparæ) which fly back to the plum tree and give birth to the true sexual females (Fig. 4), which never acquire wings and never leave the plum tree. By the time this generation has matured, which requires but a few days, varying according to the temperature, belated winged individuals which are the true males (Fig. 5) fly in from the hop fields. These fertilize the wingless true females upon the plum leaves, and these soon thereafter lay the winter eggs. Thus, there is but one generation of sexed individuals produced, and this at the close of the life-round—the females wingless on plum trees; the males winged on hops. All intervening generations are composed of virgin females only (parthenogenetic). This is the invariable round of the insect's life.

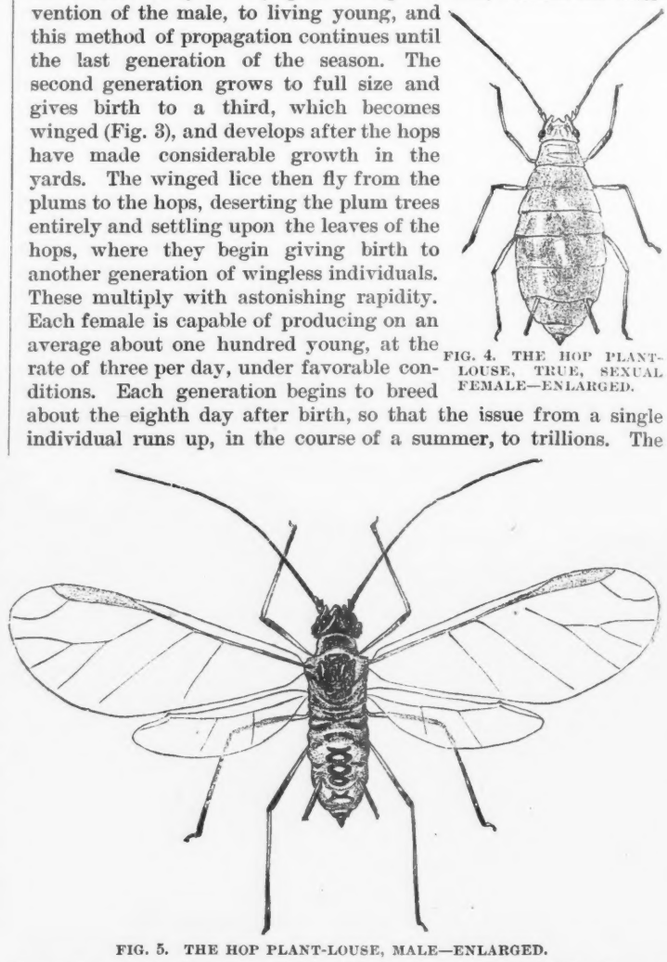


FIG. 4. THE HOP PLANT-LOUSE, TRUE, SEXUAL FEMALE—ENLARGED.

FIG. 5. THE HOP PLANT-LOUSE, MALE—ENLARGED.

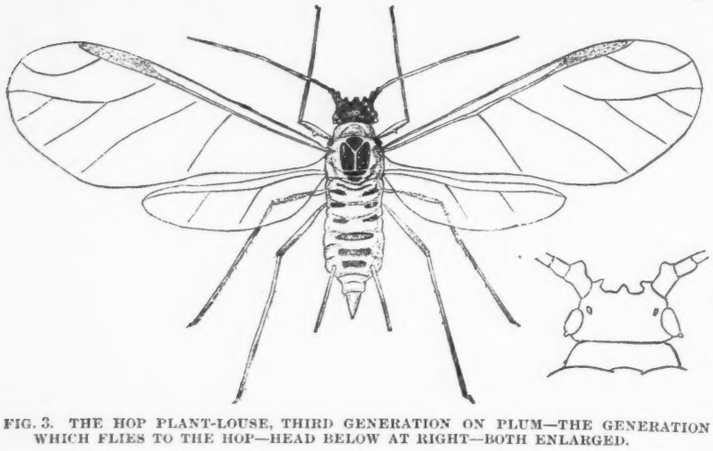


FIG. 3. THE HOP PLANT-LOUSE, THIRD GENERATION ON PLUM—THE GENERATION WHICH FLIES TO THE HOP—HEAD BELOW AT RIGHT—BOTH ENLARGED.

Remedies.—From the life history just given three important facts are obtained: (1) It will pay to make a preventive application of some one of the mixtures mentioned further on, with apparatus there described, to all plum trees in the neighborhood of hop yards, either in the spring before the appearance of the first winged generation and its consequent migration to hop, or in the fall after hop picking and after the lice have once more returned to the plum and are making their preparations for the laying of winter eggs. The latter time will, perhaps, be preferable, for the reason that in the fall the plum trees will be less susceptible to the action of the washes, and a stronger solution can be applied without danger to the trees. (2) All wild plum trees in the woods through a hop-growing country should be destroyed. (3) The hop vines should be either burned or thoroughly drenched with kerosene emulsion as soon after the crop is harvested as possible, with a view of killing the males, and thus preventing the impregnation of the females. (4) If the above

measures have been neglected and the lice have attacked the vines, the crop can still be protected by spraying with insecticide mixtures which, if thoroughly applied, will prove quite effective, and there will be no danger of reinfestation from neighboring untreated yards, since during the summer the lice cannot migrate except by crawling from one yard to another.

Substances to be Used.—Of all the different substances experimented with in 1888, none gave more satisfaction than properly prepared kerosene emulsions, and fish oil soaps.

FORMULA FOR KEROSENE EMULSION.

Cheap kerosene	pints	8
Water	do	4
Soap	pounds	½

Dissolve the soap in the water and add boiling hot to the kerosene. Churn the mixture by means of a force pump and spray nozzle for five or ten minutes. The emulsion, if perfect, forms a cream which thickens on cooling, and should adhere without oiliness to the surface of glass. Dilute one part of the emulsion with twenty-five parts of water. A common grade of kerosene, which is good enough for this work, can be bought in most localities at eight cents per gallon by the barrel, and the soap used can be made for one cent a pound. This would make the batch given above cost eight and one-half cents, and diluted with twenty-five gallons of water to one of the emulsion would make thirty-eight and one-half gallons of wash. At this rate one hundred gallons will cost twenty cents.

FORMULA FOR TWENTY-FIVE POUNDS FISH-OIL SOAP.

Crystal potash lye	pound	1
Fish-oil	pints	3
Soft water	gallons	2

A strong suds made at the rate of one pound of this soap to eight gallons of water will also be found a uniformly safe and satisfactory wash to use, killing the lice and not harming the vines. After standing three days, however, the suds will lose its efficacy.

Spraying Apparatus.—In large hop yards it will be necessary to employ a mounted pump that may be drawn by a horse between the rows of vines, as for instance the apparatus shown in Fig. 6. The apparatus should comprise a good double-acting force-pump, attached to a barrel or box reservoir for the insecticide, combined with hose and a good spray nozzle. Since it is very important to spray the underside of the leaves, and this in the case of the lower leaves cannot be satisfactorily done with the Nixon nozzle, the use of the nether or side spray Cyclone or Riley nozzle is to be recommended, and a number of firms advertise both nozzles and pumps. The hose preferably should be good cloth insertion three-eighths or one-fourth inch rubber tubing, which will answer every purpose and will be light enough to be elevated on a bamboo pole (fishing rod) as shown in the engraving.

Though somewhat expensive, an apparatus such as the above will last for many years and be useful for other purposes. In small hop yards a knapsack pump will answer the purpose quite as well. Three very good and substantial ones are on the market.

[The illustrations herewith are from the circular referred to, and are used by permission of Acting Secretary Edwin Willits.]

Fig. 6. APPARATUS FOR SPRAYING HOPS.

CARE OF THE CLEMATIS.

We are often asked how can we make our large-flowered varieties of clematis cover the trellis or wall, instead of having them die down to the ground every winter. We do not wonder that the possessor of a *C. Jackmanni* should wish to preserve it, as it is one of the most generous flowering plants under cultivation. To preserve the whole of this class is a simple matter. Have them on supports that can be laid down during winter, and cover the plants to the depth of six inches with newly-fallen leaves, which can be kept in place by brush or evergreen boughs. In early spring, after severe freezing weather is over, remove the covering, and replace the trellis to its proper position, and the work is complete. After the wood has had two summers' growth it will be sufficiently hardy to withstand the rigor of our winters. Should the plants not make a satisfactory growth in one season protect the second winter, and ever after there will be no need of further protection. The young, lateral branches will die annually, and should be cut off in early spring close to the parent stem. This will not in any way impair the beauty of the vine, or check its flowering.

Strawberries Next Season.—It rarely proves satisfactory to clear out old strawberry beds. The better plan is to plant a new bed as soon as the old one fails to produce a full crop. Potted or bedded plants set out in July or August in well prepared ground, and properly cared for during the remainder of the summer, will produce a fair crop of berries next year.

HOUSEHOLD

What Busy Housewives Should Read.

MARY E. FOLSOM.

Busy people, above all others, should know how to read—how to select the most important facts or the predominant motive in a book—in short, how to get the gist of it without reading every word.

Robert Collyer, in an address at the dedication of a library, said that while on a western journey he stopped one hot, dusty day at a drug store for a drink of soda, which was so cool and delicious that he asked the name. "Sweetened wind," was the reply. "Like much of our modern literature," added Mr. Collyer, "it was delightful, refreshing, and absolutely needful at the time, but we cannot live upon 'sweetened wind.'"

Well, what shall we live upon? The solid food of our ancestors, who had slower brains and stronger backbones, is not relished by this generation. A letter-writer in one of our New England papers claims to have investigated the subject and finds that country people are familiar with Scott, Dickens, and popular writers of fiction, though they do not care for Howells. Yet he has given us, if not the great American novel, the nearest approach to it. The characters and situations in "Silas Lapham" could have been possible only in our country and period. "Country people," says the same writer, "do not read Shakespeare much nowadays." Neither do city people, although he is studied in many of the high schools.

The famous poets of the past are known by name to most of us, but that is all; and our own poets, historians and essayists are honored socially, and gossiped about in "literary" letters by persons who never read a line of their writings. The truth is, this is an age of newspaper personalities and prose. Even fiction parades as realism, and Gradgrind, with his facts, is the popular man. The present fashion of using fiction as a vehicle for all sorts of social, political and religious reforms is in a line with the "object" teaching in our schools; an excellent device for training the perceptive faculties, but how is it with the imagination—that eye of the soul? It is true that such genuine stories as "Uncle Tom's Cabin," and "Ramona," justify "the novel with a purpose." Walter Besant's "All Sorts and Conditions of Men," out of which grew the People's Palace of Delight in London, a philanthropic scheme, and "Robert Elsmere," the stimulus of the "New Brotherhood," a new religious movement, are notable novels with practical results. Edward Bellamy's "Looking Backward" has set more people thinking upon the injustice and danger of our present industrial methods than volumes of ordinary protest. Charles Dudley Warner's "Little Journey in the World" is full of lessons for his countrymen to ponder over, and "Black Beauty," the story of a horse, is the noblest plea for kindness toward animals. Still, the fact remains that great literature deals with the principles of life, and not with its temporary phases and "isms"; so let us read, at least, one play a year of Shakespeare's, one poem of Milton's, Wordsworth's, Byron's and Shelley's, one "Imaginary Conversation," by Landor, four or five pages of Eckermann's Conversations with Goethe, one chapter in Carlyle's French Revolution, and one of Coleridge's Criticisms on Shakespeare. When a novelist turns historian we are certain to receive vivid impressions and, through such authors as Thackeray and Mrs. Oliphant, correct ones. His "Four Georges," and "English Humorists," and her "History of English Literature," in the seventeenth, eighteenth and nineteenth centuries, are more absorbing than most fiction.

As every first-class journal devotes some space to the needs, activities and progress of women, we would not suggest for a small, permanent library books written especially for them. Valuable as such books are, they deal with problems women are working out for themselves. For busy women, who want to understand the mythological and historical allusions often met with in authors, we suggest a few reference books. Bulfinch's "Age of Fable," edited by E. E. Hale, is the best handbook of mythology. For a knowledge of the "classics" we are no longer obliged to go to college, thanks to "The Preparatory Greek Course," and the same in Latin, two valuable books in the Chautauqua course. Another Chautauqua book which meets a long-felt want is John C. Van Dyke's "How to Judge of a Picture." We may as well acknowledge that the majority of Americans are deficient in art education, and consult this little book before visiting an art gallery.

When busy women wish for information in simple language, free from scientific and technical expressions, let them consult books prepared for young people, by a scholar who understands them and his subject. For added pleasure in country walks and drives read John Burroughs's "Birds and Pets," and "Signs and Seasons." Hamilton Gibson is an artist and essayist who writes of nature like a lover, and Thoreau's "Walden, or Life in the Woods," is one of the most unique productions in any language. If busy women cannot own the seven volumes of Dr. John Lord's Lectures, it is to be hoped they may be on the purchasing committee for school, church, or public library. These volumes are a good sized library in themselves in their comprehensive survey of the world from Moses to the middle of the present century. They are written in charming and suggestive style.

A good biography—by which we mean the story of a whole life, its successes and failures, its hopes and disappointments, its attitude in the great crises of the soul—is a mental and moral tonic we all need. Modern literature can afford to forego some of the dramatic glory of the sixteenth and seventeenth centuries, the elegant finish of the eighteenth, and the aspiration and melody with which our century began, in lieu of the scientific spirit in our history, the conscience in our criticism, and the aim at justice in our biographies. In biography we have two especially fascinating books by Edward Dowden, Professor of Literature in Dublin University, "Life of Shelley," and "Life of Southey." Horace Scudder's "Life of Bayard Taylor" is alive with the magnetism of that most American of Americans, and Thomas Higginson's "Life of Margaret Fuller" is a noble tribute to a gifted woman. John Fiske as historian, Stedman, Higginson, Lowell and Whipple as essayists and critics, Oliver Wendell Holmes and George William Curtis, as social philosophers, draw our thoughts out of "ruts" and awaken fresh emotions as we turn their pages. Handy books for odd moments should always be lying on shelf or table; such, for instance, as Selections from Ruskin or from Emerson, Wit and Wisdom of George Eliot, and Bartlett's Book of Quotations. Finally, let us choose the best, in whatever line of reading taste and inclination lead.

Saving Work.

WALDO F. BROWN.

Every woman needs a large table on which to wash dishes, milk-pans, cans, pails, etc., and I thought I had done about the right thing when I furnished my wife one three feet wide and five feet long. But I found that it took a good deal of hard work to keep it clean, and one day my wife suggested a zinc cover. I bought for one dollar a sheet which completely covered it, and it is always smooth and bright with less than a fourth the work it required before covering. I believe the one thing which has saved the most work is my arrangement for setting milk. We are remote from a pond from which to cut ice, and so do not use it for cooling milk. For some years we used our cellar, which is cool and suitable, but the work of carrying milk up and down stairs is so heavy that I determined to arrange something better. We have a well of good cold water six feet from the summer kitchen. I made a tank one foot wide and deep enough to hold a three-gallon can of milk, and placed it just inside the summer kitchen, and cut a hole through the siding so that we can pump directly into the tank. At the bottom a faucet projects outside, so that the water can be drawn into a small cemented basin, which discharges into a tile drain. A waste-pipe at the top discharges into this basin, and now when the men come to the pump for water, instead of pumping a tubful for us to empty, the waste water runs through the tank and cools our milk. The tank is made of inch-and-a-half lumber, and painted three coats inside and out. I am not sure but it would be nearly as cheap, and better, to make a box of inch lumber and line it with zinc, as it would be easy to keep it sweet.

Our cellar has a cement floor, and food keeps cooler and will keep sweet longer placed on the cellar bottom than in a cupboard or safe, but it must be covered from flies, and when covered closely it often has a musty taste. We have prepared some boxes of light wood, with wire such as we use for fly screens to give ventilation. Two boxes are needed, as we sometimes must put warm vegetables in, and these should have a box by themselves. By opening a cellar at night, so as to thoroughly ventilate it, darkening it in daytime and sprinkling the cement floor with cold water occasionally, a cellar may be kept delightfully cool.

Ill-Mannered Children.

NELLIE BURNS.

It would be a blessing, indeed, if many a mother could see her children's behavior through her neighbor's eyes. It would no doubt remove the scales of maternal blindness and result in good to her offspring. There is no more disagreeable object in life (unless it is an ill-behaved man or woman, and such conduct in mature years is generally the result of early training) than a thoroughly ill-mannered child. How often we see on the street, at entertainments, while both visiting and receiving visitors, children who by their obtrusive ways and constant talk render every one about them uncomfortable. That home discipline has in a measure degenerated in the last score of years no one can doubt. The quiet, respectful child is almost a thing of the past. I do not mean that children are to be restricted from ever making noise. I like the hilarious racket attending childish sport when it is made in proper season. But that season is certainly not when the mother is entertaining company or when a child is a guest in another's home.

It seems strange that any mother who realizes her responsibility as a mother does not reason to herself in this wise relative to her child's character: "When my little one was born it knew absolutely nothing. It had no realization of morals or manners. Only as it is taught the difference, bad ways and good ways, pleasant ways and disagreeable ways are alike to it. Consequently it rests upon me as its mother, its most constant companion, the one most deeply interested in its welfare, to be earnest and vigilant in teaching it such ways only as will produce pleasant and desirable traits of character."

I once visited at the home of a lady who was a most intelligent, cultured person. Among her several children was a five years' old boy whom I think I shall never forget. There was scarcely an instant's cessation during the day from his noise and chatter. As for his actions they were simply indescribable. At one time he climbed on the piano and thumped the keys with his shoes. The following is a sample of his mother's attempt at conversation with her visitor: "I am reading a book called Dream Life, and it is so beautiful. (Tommie, do let Mabel alone.) The language throughout the book is smooth and poetic. (Tommie, come out of that cabinet.) You have read the book, you say? Well, isn't it charming? (Tommie, stop drumming on that piano.)"

Is it not deplorable that any mother will give her ignorant, dependent little one such wretched training? Does such a mother never look into the future and see what will be the result of such discipline in early life? Does she not see trouble ahead for herself? Does she take pleasure in thinking that she is raising sons and daughters whose manners will be repulsive in good society? Viewing it in another light, has any mother the right to give the little irresponsible being whom she has brought into this world such a start in life? Is it not a sacred, binding duty upon her to teach her child good morals, good manners, and every other attribute conducive to the making of a good, pleasant character?

Differences of Flavor.

DR. A. S. HEATH.

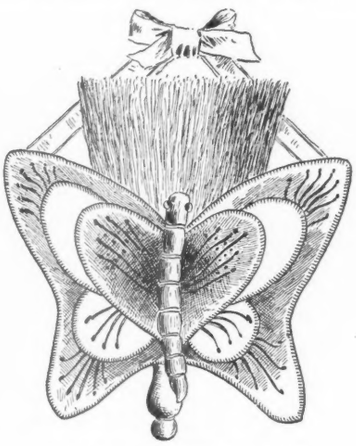
Roasting, toasting, broiling, boiling, stewing, steaming or baking of meats or vegetables each impart a peculiar flavor so that a keen sense of taste can readily detect by which of the processes

the cooking was performed. Yet science, with all its delicate tests and appliances, cannot yet explain the changes made in these several methods of the culinary art. Nevertheless, modern chemistry can throw a flood of light upon the proper methods of cooking. It does not require an epicure to distinguish the difference of taste and flavor of half fattened meats from those of prime quality, no matter how perfectly cooked or how temptingly placed upon the table. A leg of three-year-old Southdown stall fed mutton or one of meadow fed half grown Leicester equally well cooked has each a peculiar flavor which any well-bred Englishman can detect. Americans must be excused in such matters of discrimination, because they never have time to spend on gustatory speculation. Chemists, with all the appliances of a well-equipped laboratory, with their reagents, test tubes, beakers, etc., cannot thus demonstrate these differences of flavor; yet, as science would say, the differentiation of flavors requires gustatory education and training. The tea taster and coffee smeller are examples of this acquired acuteness of the senses.

Butterfly Broom Case.

ANNIE HAMILTON DONNELL.

Harmonious shades of plush should be used for this, all the edges being worked with a button-hole stitch. Fancy stitching with the same silk should be inserted upon the leaves, as shown in



A CASE FOR A CLOTHES BRUSH.

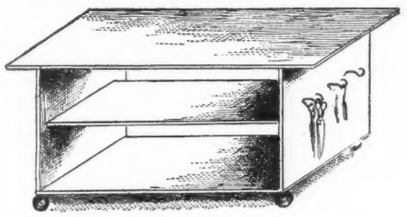
the engraving. The long roll corresponding to the body of the butterfly is of plush, stuffed with cotton, and crossed five or six times with silk drawn tightly around it. The various pieces of plush should be lined with silk or satin, and a broad band placed across the back and stitched to the edges of the plush to hold the broom.

A "Stowaway" Work-Table.

The accompanying cut illustrates an article of furniture which is not often seen. It is furnished by Clifton S. Wady, of Middlesex Co., Mass., and is so practical and handy that every woman would be the better off for its possession. Its construction requires simply five pieces of pine board or other wood—hard wood is preferable for the top—and a set of casters and a few screws complete the list. The top is larger than the bottom piece, and overhangs about one and a half inches all around. If a carpenter is employed to put it together, let him make the shelf to run in grooves, sliding in from either side. A simple finish is secured by countersinking the screw-heads, evening up with putty, and staining the whole, or rubbing up with pure shellac, cut in alcohol, on the natural wood. If the latter, three coats will permit of a high polish on the hardwood top. The shelf surfaces are best left without stain, as they are often to come in contact with silk, lace, or dress goods of delicate fabric.

Certain shelves to be devoted to "small things" might be divided lengthwise; but for many purposes one whole shelf left clear is most convenient.

The work-basket, the darning and mending outfit, and commonly the articles themselves, may all find places in this wonderful "stowaway," and can be easily covered from dust and sight if desired. Underneath the overhanging length of top stretch tightly a picture-frame wire, after putting on a sufficient number of small brass rings on which to sew the drapery. The portiere can be anything from brown linen to china silk. The dimensions of the table should, of course, conform to the demands or limitations of the place where it is to be used. This one is about three feet long, two feet wide, and two feet high on the casters. With a full load it can be readily moved from place to



A HANDY MOVABLE WORK-TABLE.

place. Small hooks on the ends provide permanent location for numerous articles in everyday use, and answer the questions propounded a hundred times in the twenty-four hours, "Where's my button-hook?" "Where are my scissors?" "Where is my tape-measure?" The top is of itself a convenient cutting board.

A Man's Taste.

JENNIE JAMESON.

I have a friend whose husband (who, by the way, is my brother) thinks he knows more about woman's dress than any other living being, and insists on doing his wife's shopping, while the fact is he has not the slightest idea of style, and is so color blind that he can match blue and magenta together and never be the wiser. A short time ago he heard his wife say she wanted a new hat for every-day street wear, and he told her he would bring one from town that night. I was there when he promised to bring home the hat, I saw that she was slightly disturbed at his offer, and as soon as he had gone I asked her where he would get the hat. She told me, and, without mentioning my intentions to her, I went to the milliner and told her what I wished her to do. As I was a good customer she readily agreed to my proposition. Mr. Blank came in a short time after, and told the milliner what he wanted.

"Something stylish or something sensible?" asked the milliner.

"Something that will be pretty and yet sensible," he replied.

She showed him several quite pretty hats, but she did not urge him, and as he found it difficult to select she said:

"I have one here that I can trim to order if you like it," and she showed him a shade-hat of a style of several years ago.

"That's just the thing," said he. "How will you trim it?"

"Is your wife dark or light?" she asked.

"A brunette."

"Then white would look well."

"I don't like white. How would that do?" and he pointed to some light blue tarlatan that was lying on the showcase.

"I could use that, although it is rather expen-

HENRY'S CHOICE.

sive," said the milliner, turning away to hide the smile that threatened to betray her.

"I don't care for the expense; fix it up in your best style, and I will call for it at four this afternoon."

"Shall I not send it up?"

"No. I wish to take it home myself for special reasons."

"It will be ready," she said, as Mr. Blank bowed himself out; for he never forgot his manners even in business.

At four he called for the hat and started for home. I was at the house when he came, and I slipped into the parlor and hid in the bay window, where I could see without being seen.

"There, Mamie," he said, "I've got you a hat that won't make you look so much like a guy as that last one did. If there is anything I dislike it is to see a woman with a hat that does not become her," and he opened the box and handed the hat to his wife. She managed to keep a straight face and put the hat on at the glass, then she turned around so he could see her. The smile on his face disappeared in an instant, and was followed by a look of amazement.

"You haven't got it on right, or something," he said.

"Why, yes I have. I used to wear one like this when I was a little girl."

"Is that so? Well, then, the color doesn't seem right, or something."

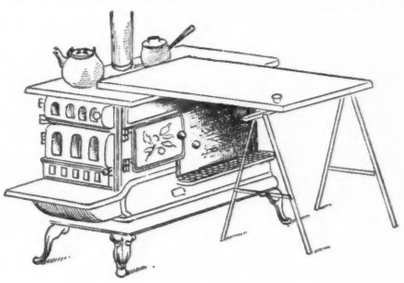
"It does not look just right. I'll call sister Jennie and see what she thinks about it."

"No, don't. I don't want her to know that I brought home anything like that. If you won't tell her I'll agree to let you do your own shopping after this," and he pulled out a roll of money, and, grabbing the hat from her head, he crushed it into a small ball and hastily left for the kitchen to burn it, while I ran, laughing, home. To this day he does not know that I imposed upon him, but Mary does, and she says she never can feel too grateful to me.

A Southern Fruit Evaporator.

L. D. SNOOK.

In the Carolinas, where immense quantities of apples and peaches are each year dried for market, many of the farmers use a novel yet effective dryer



A SERVICEABLE FRUIT DRYER.

for the purpose. It consists of a water-tight tin vessel, or rather pan, two and a half feet in width and from four to five feet in length and three inches in depth. The usual method of using is to place one end of the pan on the stove, the outer end being supported by the light bench, as shown in the engraving. At or near one corner of the top is soldered a small funnel, through which water is poured into the pan which is partly filled—a cork being placed in the funnel, leaving a small hole for the escape of steam, should too much be formed.

The fruit is spread evenly over the upper surface of the pan, the juice being evaporated from sliced apples in two or three hours' time even with a moderate fire. This arrangement can be and is often used, and the cooking and baking progressing at the same time, as indicated in the accompanying sketch. Those who do not have a large stove often build a simple arch out of doors, upon which the pan is set.

Four Women Joint Economists.

GORHAM SILVER.

These four women are not a club, with by-laws and regulations, but simply four good housewife friends. Intelligent, thrifty wives and mothers, they mass their limited funds and buy at wholesale every article, with the exception of butcher's meat, for home consumption. Two hundred pounds of sugar is bought at wholesale; a cent and a half is saved on a pound. Each takes fifty pounds, at a saving of seventy-five cents. Canned vegetables and fruits by the case net a like result, and so on through the grocer's catalogue to soap, starch, and bluing, which at retail is a considerable item in the family account. Aside from the material economy, what a great mental economy is achieved, a thing to be considered when housewives are wearing out under small worries, being obliged to remind themselves continually of giving out sup-

plies, which if not replenished in season will disorganize the household machinery past patience and temper. In matters of dress there is even greater thrift. These ladies are all sensible women of excellent taste. On the street they usually wear black. A whole piece of black cashmere or Henrietta is bought at wholesale and equally divided. A clear saving is made of two dollars and fifty cents on each dress, and the pattern includes material for a new waist. For handsome gowns a web of black silk is purchased and divided, allowing sufficient for necessary repairs. Three dollars are saved on each gown. Children's wear is purchased in like quantity. Cambrics, flannels, and cottons by the bolt; black dress braids—which can always be exchanged for any other color—tapes, spool silk, and twist by the dozen; upon all there is an appreciable discount, merciful to a slender purse. I may be "telling tales out of school," but has not every money-pinched sister three other money-pinched sisters who may profit by my treachery?

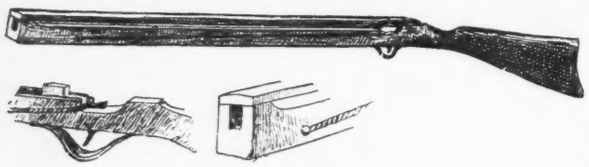


FIG. 1. GUN.

A Boy and His Jackknife.

WEBB DONNELL.

The old-fashioned boy used to do a vast amount of execution with his jackknife. In describing some of the things he used to make with it, I am going on the supposition that, in this respect, the boy of the present is modeled on much the same lines. The one first mentioned had a predilection for making a vast number of war-like implements,

FIG. 2. PEA SHOOTER.

from a cannon that would demolish whole columns of wooden soldiers, and knock their defenses down about their ears, to the less destructive "pea-shooter." The elastic gun that is figured in the illustration (Fig. 1) possessed so many points of excellence that it is described here for the benefit of the present generation. The body of this wooden weapon is made from a piece of inch or inch-and-a-quarter pine board, the upper edge of which has been "grooved" by a plane. This square groove can be readily cut out, however, with a knife and a quarter-inch chisel, if care is taken to keep the sides and bottom smooth and straight. The top is a smooth, flat piece raised nearly half an inch above the main part of the "barrel," to admit the movement of the elastic cord that propels the square wooden "bullet" made to fit the groove. A strong elastic cord is fastened on each side near the end and is drawn back and slipped over the "head" of the barrel, as shown in the smaller cut.

FIG. 3. TOPS.

The upper end of the trigger is an inclined plane that raises the cord and frees it when moved forward.

The old-style pea-shooter (Fig. 2) shows a somewhat remodeled form in the figure given, but the principle is the same. The rounded handles are both for convenience and for looks. The rubber bands upon the sides should be of good quality and stout.

The sketches of the top (Fig. 3) explain themselves. The handle is to hold the top steady while the string is being rapidly unwound. This string should not be fastened to the shaft of the top, but simply wound tightly around it after the handle is put in position. The pulley blocks (Fig. 4) can be made both single and double, and in uniting these by lines, of the proper size, much valuable information concerning mechanical powers can be gained. The propelling power of the spring cannon (Fig. 5) is a piece of ash or other "springy" wood, one end fastened securely to the gun carriage, and the other to the piston as shown in the cut. The thicker the piece of wood that is used the more powerful will be the force of propulsion. The wheels are made of two solid disks of wood, marked to represent spokes. When a boy gets his jackknife in good running order he ought to set it to making something for his sister as well as for himself, and something that will be very highly appreciated is a doll's sofa (Fig. 6) which need not present many difficulties in construction. The back is made of a solid piece cut out in the manner figured. A three-piece frame is mortised into the lower edge of this. The arm is a solid piece cut out and secured to the frame at the front. The legs in front are to be cut out of one piece in the form shown, or in any other form that suggests itself. The legs at the back may be simply two square or round uprights.

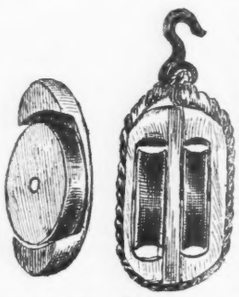


FIG. 4. PULLEY BLOCKS.

The cover should be put upon the back first of all, and lightly stuffed with cotton. The cover for the seat and arm should then be thrown over the back, wrong side out, and firmly tacked along the dotted line and the lower edge of the back. It can then be turned back and brought over the edge at the front. Before bringing it forward, however, a piece of cloth should be tacked over the bottom of the sofa and the under part of the arm to hold the cotton with which the seat and arm are to be stuffed. If the sofa should prove a success, a few chairs and a table to go with it ought to be "plain sailing" for the jackknife that has a bright and ingenious boy to steer it. Of articles that would be of interest both to boys and girls, which a nimble blade can turn out, there may be mentioned checkers and checker-boards, chess men and dominoes, besides various forms of wooden banks, in which money may be safely deposited until a "run" occurs on them, induced, perhaps, by some special activity in the candy market. If the owner of the jackknife desires to make something of practical value, his mother will doubtless be glad to have a large wooden spoon with which to mix her bread and a bread-board upon which to cut it.

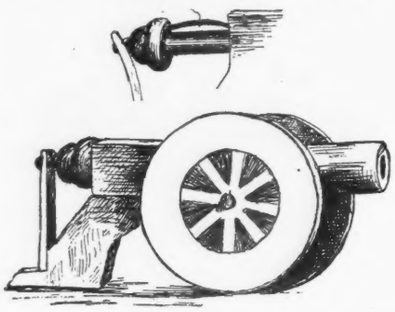


FIG. 5. CANNON.

Little Helps.

ALICE CHITTENDEN.

There are certain little things connected with housekeeping the knowledge of which greatly lightens the work. Judging from the number of requests one sees to know how to get rid of ants, and from the number of roach powders in the market, it cannot be generally known that borax will rid the worst infested premises of roaches, water-bugs, and ants. For the two former mix it with powdered sugar in equal quantities and sprinkle thickly along the floor and over the closet shelves, and with a small bellows blow it into the cracks where they congregate. Let this lie for several days, and meanwhile do not sweep the corners too carefully. More than a second application will seldom be necessary. For ants mix with red pepper.

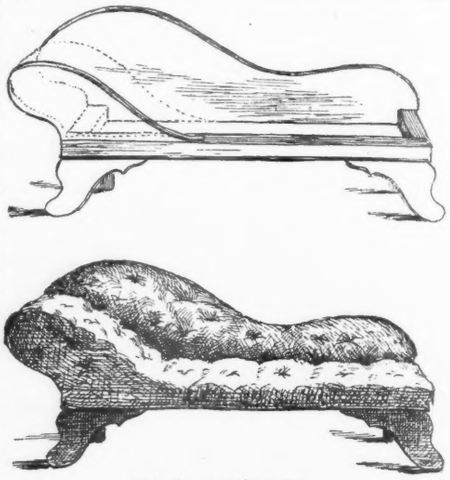


FIG. 6. DOLL'S SOFA.

The labor of a regular cleaning day for silver can be abolished if you will keep a cake of silver soap at your kitchen sink, and whenever a piece is tarnished rub it off while washing the dishes, and once a fortnight make a suds with this soap and simply wash and dry all the silver in use.

The stains made by coffee and tea on china can be rubbed off with a cloth and sapolio. Cornmeal or salt, tea leaves, or newspaper torn in bits, squeezed out of a pail of water and scattered over the carpet, will clean and brighten it. Always give a very dirty carpet a second sweeping. Finish the good work by going over it with a flannel cloth wrung out of of a pail of warm water with a tablespoonful of pearline dissolved in it. Change the water when it becomes soiled.

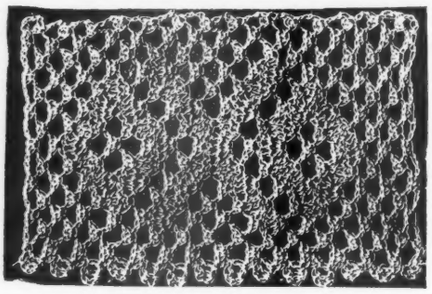
Another little help is for wash day. When the clothes are taken from the line fold each piece instead of thrusting them pell-mell into the basket, and they may be ironed with half the work.

A number of sweeping sheets, which may be made of calico or cheesecloth at three cents a yard, should be kept to throw over bookcases and large pieces of furniture on sweeping days.

Diamond Net Lace.

Chain thirty-one stitches, turn; three double crochet in sixth stitch from hook, * chain three, pass three, three double crochet in next, repeat from star five times, one treble in last stitch of chain, chain three, turn.

2d row—Two treble in third stitch from hook, one treble in treble, * chain three, three double crochet in middle stitch of next three chain, repeat from star to top, three double crochet in second stitch of chain at top (seven little clusters of three double crochet in each row), chain five, turn.



LACE EDGE.

3d row—A cluster of three double crochet in middle stitch of each three chain, with three

chains between each cluster, all the way to lower edge (seven clusters), after the last one at the edge work one treble in first treble at edge, chain three, turn.

4th row—Like second.

5th row—Like third.

6th row—Like second, except that the open mesh after the third cluster of doubles is filled (every filled opening that helps to make the pattern has three treble instead of the usual three chain—one treble in each double crochet in the cluster just beneath the hook, then the next cluster of three double crochet is worked as usual; this brings three double crochet, three treble, three double crochet in succession), then the row is finished like the second.

The turn at the top, the regular mesh of the groundwork, and the dainty scalloped edge is worked the same throughout the whole pattern; nothing varies but the filled meshes, so the other directions need not be repeated.

7th row—Fill the open space after the third cluster of doubles, and the space after the fourth cluster (three treble in each).

8th row—Spaces after the second cluster, and after the fourth are filled.

9th row—Filled after the second and after the fifth.

10th row—Filled after the second and fourth.

11th row—Filled after the third and fourth.

12th row—Filled after the first, third, and fifth.

13th row—Filled after the second and fifth.

14th row—Filled after the second and fourth.

15th row—Filled after the third and fourth.

16th row—Filled after the third. (This is half of the figure, the center of the cross; the remainder is the same, only in reverse order.)

17th row—After the third and fourth.

18th row—After the second and fourth.

19th row—After the second and fifth.

20th row—After the first, third and fifth.

21st row—After the third and fourth.

22d row—After the second and fourth.

23d row—After the second and fifth.

24th row—After the second and fourth.

25th row—After the third and fourth.

26th row—After the third.

This finishes one pattern; repeat from beginning for every additional pattern.

This makes a very durable lace, as there is no "weak spot" in it, and, on account of the neat regularity of the edge, it is easily laundered. By finishing both edges, according to directions given for upper edge of lace, a handsome insertion is produced.

A Dainty Parlor.

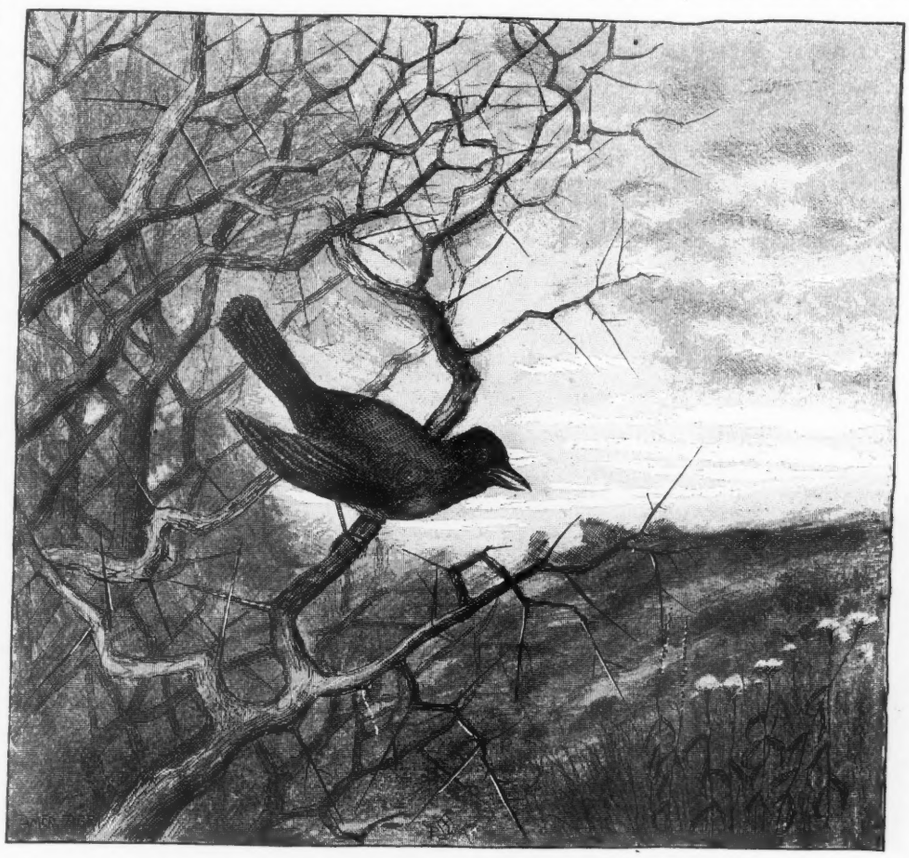
ADA B. HOUSTON.

I recently visited the home of one of my young city friends and was so pleased with the general arrangement of her parlor that it seemed worthy of description for the AMERICAN AGRICULTURIST. The room was about twenty feet long and fourteen wide, with a large bay window of nearly its width comprising five narrow windows, and there was also one single window at one of the sides. A border of brown and cream passed around the room and the bay window was bordered with it. There was a large tapestry rug of neutral brown shades in the center of the apartment. At the windows were Madras draperies of brown, interwoven with dull blue and old pink. To separate this room from the back parlor were plain terra cotta draperies. A study had been made of the different parts of the room, and the bay window was decorated with white and gold. A white clinging material was looped gracefully across the arch and hung half-way down the sides. On the floor was a large white fur rug. There was a white maple rocker called a "poker chair" from the design upon the back, and at the left a large yellow jardiniere containing a tall palm. Only one curtain was hung at a window, and as a finish for the center of the bay window there was a light yellow silk sash curtain, with the Madras draped over it diamond shape and held in place by a dull pink ribbon. Two white denim floor cushions embroidered in gold thread, at either corner, cut this retreat off from the rest of the room. Tiny white panels were on the walls, and the general effect was very pleasing.

At the left of the bay window was a rug couch of brown and dark blue, and this was covered with cushions of brown and blue silk. The opposite corner contained a bookcase with a fancy mantle for bric-a-brac, and with an embossed light blue silk curtain suspended beneath. On the floor at the right were two large denim cushions, one of brown, the other light blue; at the left a grayish blue bamboo chair. As blue predominated here, it was a pretty contrast to the rest of the room.

The "comfort corner," as it had been christened, consisted of a silk screen with a turkish chair placed in front, at the right a piano lamp, at the left a small table covered with bits of china, etc., for five o'clock tea, and on the shelves beneath were several magazines to tempt one into this cozy nook. At the right of the bay window was a small table with a square of dull blue silk thrown carelessly across it with a bunch of cat-tails peeping over a piece of statuary. A sixteenth century rocker was placed temptingly near this pretty corner.

My young friend began with little more than the carpet and one or two chairs, but has gradually added a little more until she has achieved this pretty effect. Now, as this was arranged by a young woman of seemingly little artistic taste, I think nearly every one could do likewise; not that all parlors should look alike, as they are apt to at present, but that if we could gradually do away with the set, cumbrous pieces of parlor furniture, the red, blue and gold plushes, and substitute lighter woods with but little fancy coverings it would be a pleasing change.



A SUMMER SONGSTER.

Our Piazza Boarder.

FLORENCE A. MERRIAM.

In Southern California this term would mean that we had rented part of our piazza to a young man to inclose in canvas and use as a bedroom. But our boarders were so strong they had no need to buy canvas or awning. Nor did they think it necessary to ask the price of lodgings, but took advantage of our absence to put up a whole adobe house in a crotch right out of my library windows. I confess to feeling a little hurt that the robins came while we were away, but was so glad to find them there that I could not grumble. For, ever since the days when we used to watch the birds that built on grandmother's piazza, I had wished that we might have them on ours.

They were not as glad to see us as we were to see them, however. The good woman who opened the house for us says they were so put out by her arrival and flew about so excitedly when she came near that she did not dare stop to count the eggs when she got up to look in the nest. When we came they flew off whenever we stepped out on the piazza, but it was not long before we could pass the nest, and they were so used to us that the slamming of the front door did not disturb them. One day soon after we came home I took a sunbath in front of the piazza, sitting in a big wicker rocker with another chair before me—altogether a most formidable array. While there, the robins wanted to feed their young, but it took a great deal of chirping and shaking of the tail up in a tree top on their part, and some bird dialect on mine to encourage them enough to fly past such a furniture store. Another day we were on the piazza when the father bird came with worms. He hesitated a moment, not wanting to fly right in our faces, and then came up on a twig opposite us and, when I whistled to him, he sang back in a soft, sweet way, although his mouth was full of worms. Our friendly talk quieted his fears, for as soon as it was over he flew up and fed his babies. And it was not many days before both birds went to the nest quite unconcernedly even when we were but a few feet away.

When the birds had been out of their eggs about a week, I wrote in my note book: "I open and shut my windows in sight of the robin every day without disturbing her, and she rarely pays any attention to my movements in the room, though she can see all I do, especially by lamp light. Perhaps she is taking notes on the habits of human folks and tells how 'her men and women' act, as we talk about 'our robin.'" But when we were just getting to feel as if the dear friendly birds were part of our family they began to make ready to leave us. The sultry July days had come, and the three big baby birds had a hot time of it huddled together in their nest. They fidgeted around in it, sat on the edge, stretched their wings and acted very much bored, and as if they did wish it was not so very far from their crotch to the ground. At last the day came when they could bear it no longer, and we missed first one and then two birds

from the nest. The third one spent one night alone, but started off right after breakfast the next morning.

He sat on the rim of the nest when I came out, looking off as if working his courage up, and when I came under the nest he started as if he had better go. I tried to dissuade him, but I felt that his mind was made up and so began to walk up and down the piazza, for I was determined not to let the last one of the family go without seeing how they did it. Suddenly he launched forth, straight and strong across the first bit of lawn and across the road, then gradually in a falling line weaker and weaker across the last wide stretch of grass until he finally sank into the road beyond. We were so amazed that he could do so well that we felt like applauding.

Father Robin was off hunting when his son left home, and at last when he flew up to the nest with a bill dangling with worms he gave only a few notes of surprise and then—to my confusion—instead of starting off to find the baby calmly sat down and ate up the worms himself! He gobbled down piece after piece until his crop stood out like a fat bag of meal, and then stood stupidly on the edge of the nest as if ready for a nap. I made some move that startled him and he awoke to his paternal duty. He roused the neighbors, I judged by the commotion that followed—the calling, the anxious watching from the best posts, the flights from tree to tree, and the general hurrying and scurrying of robins through the grounds.

During the hunt the small bird sat in the sea of grass, as quiet as a toadstool, for the most part, though at times he gave short hops and pretended to peck at something in the grass. But at last his father found him and wisely led him off to a safer spot than an open lawn. But though we approved of his going away, we were sorry to see the last of our dear boarders, and watched all the robins that came in sight for some time, trying to recognize our family.

One day I made the note, "Our robins seem to be resting; at least there is a pair that I take to be ours that sit in the evergreen by the dining-room window in a very lazy sort of way. I wish I could be sure of our birds! One I take for the father has come on the lawn several times singing and looking up at us in the same friendly way he used to. I wonder if he remembers us and his crotch as we remember him—dear little creature." A week later I made the entry: "A father robin was out on the lawn with his young son this morning; a pair I took to be part of our family. The spotted boy hopped awkwardly as if the grass blades interfered with his progress. He wandered off somewhere and the old one came hopping up the stone walk"—always a favorite run with our robins—"stopping to look for worms every few steps and then looking up at me as I whistled *tril-la-ree tril-la-rah* to him, as I did when the family were here. When about a rod from the piazza he sat back on his tail with dignity and looked around as if he owned the lawn. Then he crossed the road and flew up on a stick in the flower urn"—one of his old perches—"and sat opposite us for some time in as friendly at-home a way as possible."

Now it is fall and the robins are gathering in flocks to go berrying and then start on for the South, but as we look up at the nest in the crotch we think of next spring, for perhaps our dear birds will come back to us then.

A Word in Season.

KATHARINE B. FOOT.

To make old gloves of use, cut off the fingers and thumbs close to the palm. Rip off the buttons, and then cut the glove open on the thumb or the side seam. Save all the glove fingers for the box in the accident closet. Put the buttons in a box by themselves and they will often be found useful. The soft inner surface of the pieces of kid can be turned to a thousand uses in a household, such as to polish faucets or door knobs, to line iron holders, or to polish mirrors, windows and knives.

Never break a promise made to a child. To do so blights the faith of a sensitive child in a way seldom recovered from, while the dogged, phlegmatic or sullen are confirmed in each mood, to an extent not even dreamed of except by those who have not forgotten the impressions of childhood.

When a warm bath is taken, if the whole body from the crown of the head to the soles of the feet is instantly sponged with cold water, there will not be danger of taking cold. The cold water closes the pores naturally. They are left open unnaturally after a warm bath.

It is a fact not generally known, even to good nurses, that one of the greatest reliefs to the intense and agonizing pain from a wound is to place as nearly as possible to the wound (but being extremely careful not to touch it) a rubber bag, filled with water almost at the boiling point. Its effect is as quieting as an opiate, and it has no bad effects which an opiate always has. Care must be taken that the bag be new and strong, not too full, and that the top is screwed on tight. To scald the patient might be fatal, and certainly would be torture. Never use for such applications of very hot water anything except a rubber bottle, for glass and even stone bottles are not only liable to break but to become uncorked.

Outing Gowns.

For traveling and general wear on long country walks and rides, there is nothing better than the mixed tweeds or the rough surfaced wools which come striped and plaided in gray and white with a slight intermingling of bright color. These are tailor-made, with the long frock-coat now so fashionable, cut double breasted with both a *revers* and a standing collar; or else the opening at the throat is filled in by a linen chemisette. The skirt clears the ground and is fitted by side darts, all the fullness being massed in small fan plaits at the back. The trimming consists only of one or two rows of stitching and a set of richly-polished horn buttons, two rows of which are placed on the front of the bodice, two at the waist line in the back and three on each sleeve.

Dark blue serge will be the selection of a third of the women, for it is always serviceable. The simplest suits are fashioned with a belted and box-plaited waist, resembling a Norfolk jacket. More dressy, however, are those with a long coat to which is added a vest and collar of chamois colored cloth. If liked, too, a panel of the light cloth may be inserted in the left side of the trim English skirt. The sleeves rarely have cuffs, but are finished at the wrist by three small buttons set on the outside seam. Blue also takes the lead for yachting and boating suits, as blue flannel and serge withstand salt water better than any other fabric. The skirts of these are sometimes draped, with an anchor embroidered in white on the lower left hand corner. A full plain skirt, however, is preferable, and this is extremely pretty attached to a short laced corselet with or without shoulder straps, which is worn over a shirt waist of wash-silk or fine French flannel. The blouse waist is as light of hue as of weight and, for additional warmth, there is a cutaway, sleeveless jacket of blue fastened with a short band across the bust. A naval cap, with a visor, made of the dark serge or flannel, is worn with this natty suit; or else a sailor hat that is oval instead of round, with a low crown and narrow brim. This latter is trimmed merely with a band and flat bow on the left side, while across the front may be embroidered the name of the boat in which the jaunty sailor maiden is to take her sails abroad.

On the tennis field the lightest of light hues appear this season, pale pink, blue and lavender replacing the scarlet and navy shades, regardless of their tendency to fade in the sun. Meanwhile, they are most charming, and a few compromise by wearing a black or dark skirt with a delicately-tinted blouse of washable silk. Here, again, serge and homespun divide favor with the inexpensive flannelettes and outing cloths. The little corselet, spoken of above, sometimes appears; but generally the suit consists of three pieces—jacket, skirt and shirt waist. The two former are of the wool, and the latter of figured silk or fine tennis flannel. A belt is worn about the waist, or else the Gordon sash which came into vogue last season.

Bicycle riding is now becoming so popular for girls that a word about wheeling dresses may not be out of place. Brown wool, in some of russet shades, is generally chosen for these suits, and a very few have adopted the divided skirt; but, as a rule, it is made up with a regulation rather full skirt just reaching to the ankles and faced with leather. The bodice is the ordinary outing shirt of silk or flannel and the neat blazer jacket. A soft felt hat or a derby crowns the merry wheeler's head, while laced boots, leggins, one short petticoat and knickerbockers complete the costume.

Ice and Ice-Cream.

To country housekeepers who do not have their own ice-houses, but are obliged to depend upon the itinerant iceman, whose prices are always necessarily high, owing to the expense of delivery, a few suggestions regarding the economical use of ice may not be amiss.

It is better to take enough to last a week than to get a small piece every day or every other day. Especially is this so when one has a cool cellar to keep it in. You do not even need a refrigerator in this case. Take two boxes, one several inches larger all around than the other. Put a layer of charcoal in the bottom of the larger, set the smaller one within, and fill in the space between with charcoal. Fit a hinged cover on each, and keep the ice wrapped in old muslin, and then in a piece of old blanket. It is well, also, to keep a piece of old carpet thrown over all after the box is shut. When it is necessary to keep ice all night in a sick room, wrap a piece in many thicknesses of newspaper, then in a towel, and lay in the coolest open window. When you wish to crack a bit, use a large darning needle and a thimble to press it down with, or give it a gentle tap with a toy hammer.

Ice-Cream.—It is only in the country, where cream can be had absolutely pure and fresh, that one can have really ideal ice-cream. Five or six pounds of ice and a quart of coarse salt will be sufficient to freeze a two-quart freezer full of cream. One quart of pure cream, half a pound of sugar, and flavoring of any kind, is enough for six persons. Put half the cream on to heat in a double boiler; add the sugar when hot, and when all is dissolved the rest of the cream and the flavoring. Pour it into the freezing-can; see that this is rightly adjusted and the dasher up; put on the cover and fasten the crank. When perfectly cold, pack with ice, pounded fine in a coarse crash bag, and coarse salt; in the packing alternate three inches of ice with one of salt. Turn the crank until it turns rather hard, but do not turn fast. Take off the crank, remove and wipe the lid of the can, being careful not to let any salt get in; take out the dasher, scraping the cream from it back into the can; take a large, flat, wooden stick and stir in the cream from the sides of the can, beating and working it for five minutes. This makes it smooth. Now put on the lid, plug the hole where the dasher was, cover with a thick blanket, and stand away for two hours to blend.

Banana Ice-Cream.—Peel and mash six bananas and stir them into the pint of cream and a half pound of sugar when cooked as above and cooled; add the remaining pint of cream, and freeze.

Coffee Ice-Cream.—Put from two to four ounces of coarsely ground Java or Mocha coffee with a pint of cream in a double boiler, and when hot strain through very fine muslin; add half a pound of sugar, and when dissolved the remaining pint of cream; cool and freeze.

Chocolate Ice-Cream.—Put half the cream, the sugar, and four ounces of grated chocolate on to boil. When dissolved and smooth strain through fine muslin, add the rest of the cream, and cool and freeze.

Orange Ice-Cream.—Heat half the cream with three-fourths of a pound of sugar; when cool add the grated rind of one orange, the juice of from four to six, according to taste, and the rest of the cream. Finish as above.

Lemon Ice-Cream.—Put the grated rind of two lemons, the juice of three lemons and one orange, with three-quarters of a pound of sugar in a bowl, and let it stand while you heat the whole quart of cream. When scalding hot take off, and let it get thoroughly cold; then freeze partly before adding the juice and sugar.

Peach Ice-Cream.—This is made as above except that you require only three-quarters of a pound of sugar, half of which is sifted over the minced peaches or apricots, and then added when the cream is half frozen.

Brown Bread Ice-Cream.—Dry some slices of Boston brown bread in the oven, and roll and sift a cupful of crumbs. Proceed as for plain ice-cream except that you beat in the crumbs when frozen and then pack and let it stand for an hour or two. Macaroons, sponge cake, or kisses may be used instead of the bread crumbs and will give bisque ice-cream.

BOYS & GIRLS

Uncle Brad's Night Adventure.

SYDNEY DAYRE.

"Tell us one of your hunting stories, Uncle Brad."

"Yes, a bear story. Did you ever shoot a bear?"

"Yes, tell us about the first one you ever shot at?"

"Did you kill him?"

"Well, he didn't kill me, which was the most astonishing point of my first bear shooting."

"That's the story we want to hear, Uncle Brad. Go on, please."

Two or three lively boys settled themselves to listen with eager interest.

"My father," began Uncle Brad, "was an enthusiastic hunter, and made up his mind that his boys should early learn to handle guns. He used to take us out on long camping expeditions when we were quite small boys. One summer he could not go, so he engaged an old hunter, whose name was Dan, to go and take charge of us.

We took a ride by rail to a small town on the border of one of the small Canada lakes. Here we secured our canoes and supplies, and after paddling around its smooth shore came to a small river. This was our jumping-off place, for a half-breed's hut at its mouth was the last vestige of civilization. We spent the night there, and the next morning were making preparations to paddle far up the stream in search of game and fishing, when the first hitch came.

"I've got to go back to town," said Dan.

"What for?" arose in a chorus of three dismayed voices.

"The box of canned meats wasn't put in."

"What a lot of stupids!"

"Let's go on without it."

"That wouldn't do," said Dan. "I'll be back here with it, to-morrow."

"Well," I said, "then we'll go on up the stream and find a good camping place and be all fixed when you come."

"No," said Dan, "that wasn't accordin' to the 'greement with your father. You can stay here till to-morrow."

Jack, Phil, and I grumbled in great discontent but there was nothing else to be done. Dan got into his canoe and swiftly paddled out of sight.

"I say, Phil," I said, "why couldn't we go up the river by ourselves now instead of waiting till to-morrow?"

"I don't believe father'd like it," said Phil.

"Nonsense! Are we never going to be big enough to take care of ourselves? What harm could it be? We can just paddle up till we find a good spot and pitch our tent. Dan couldn't miss us to-morrow."

Phil still objected a little but the end of it was that within an hour we left the message for Dan with our last night's host and started up the stream.

It was rather hard work but the crisp, invigorating air seemed to put a new spring into our limbs, and we found delight in every touch of the wind and every glance of the sun from sky or water. We paddled with a will until we had put a long distance between ourselves and all other human beings.

At length we came to a place which seemed the spot of all others the best fitted for a camp, and with one consent began settling ourselves.

How we did work! Our enthusiasm was at a fever heat when, as the tent gleamed white among the green surroundings, we unpacked our supplies and by a roaring camp fire, which felt pleasant in the chill of approaching night, made a supper suited to such appetites.

Then work was over and we began to realize how tired we were. The sun sank low as we lingered around our fire and the tall trees above us seemed to grow taller and darker every moment. A hush in which was something awful and oppressive settled down with the twilight, broken

"IN DESPERATE HASTE I FIRED AGAIN."

only by a mournful sighing of the wind through the tree-tops, or the half-wailing note of some night bird.

Our animated chatter soon died away.

"I wish we were back—don't you?" asked Jack after a silence, speaking as if he were half afraid of being laughed at or scolded. But he received neither rebuke nor ridicule for it suddenly dawned upon me that I was in my secret heart wishing the same thing with all my might. I began to wonder how I had dared to take the responsibility of bringing my two young brothers into this solitude.

"No, I don't wish I was back," said Phil, bravely. "It's lots of fun to be off here all alone—of course it is. But I wouldn't mind if Dan was here."

"He'll be here all right to-morrow," I said. "Wouldn't it be something to tell of if we should shoot a deer or something before he got here?"

"Or a bear," said Phil.

"I guess we'll have to go farther than this before we find any bears," said I.

Phil skinned a squirrel which he had shot, and we proudly calculated that our first breakfast would be off our own game. Then we went to bed. The other boys soon fell asleep but it was a long time before I followed their example.

I don't know how long I slept before I was suddenly awakened. I knew it must have been by some noise, for with my first conscious moment I was sitting bolt upright.

For a few seconds all was still. Then I heard a crackling of branches and presently the sound of a boulder rolling down the bank. Its splash into the water awakened the others.

"What is it?" whispered Jack, creeping close to my side.

"Sh—I don't know," I said. "A deer, I suppose, coming to water."

"Let's get our guns ready," said Phil.

"Don't make a bit of noise," I cautioned.

There was more crackling and scrambling among the stones. With trembling hands I raised the tent cloth far enough to peep out.

There was no moon, and the starlight which struggled down through the trees was dim and misty, so that I could obtain but an indistinct view of what was going on outside. I could only make out a moving object among the bushes, working its way toward the rock on which Phil had left his squirrel and its skin.

At length reaching it, it seemed to arise on its hind legs but I could discern nothing more than a huge black object with clumsy and unwieldy movements, even to my inexperienced eyes far different from the graceful form of the deer I had hoped to see.

What was it? Could it have been drawn here by the smell of the squirrel. If so, it would be surely turning its attention further before long.

"What shall we do?" said Phil in a breathless whisper at my side.

Then came over me the full extent of my willfulness and foolhardiness in having led these boys of twelve and thirteen, I but a year or two older, out from the care placed over us by our father. What were we to do, indeed? I had often dreamed of the time when I should stand bravely up and shoot large game, but it had been by daylight, not in this fearful darkness in which a dozen more wild animals, for all I knew, might be prowling around us.

Something must be done. Jack held on to me as I approached the opening of the tent, imploring me not to go out, but I ordered him to keep down and, with Phil, to see that their rifles were ready for use. Then I stood in the doorway and fired in a hit-or-miss fashion for I could not distinguish the black object from the thick bushes.

A snorting, snarling growl came in answer, striking new terror to my heart. An enraged, wounded animal might rush at the tent. In desperate haste I fired again and still again as the boys with trembling hands passed me their rifles.

It seemed an age to me but could have been but a few seconds when our foe seemed to roll over, tearing at bushes and stones, then to scramble to his feet and with angry grunts hurry away. I could hear his uncouth sounds and heavy movements far away in the still night.

I made the boys lie down and sat in the tent door for the remainder of the night. We had no other alarm and in the earliest beams of the morning I awoke them and set them to work getting breakfast. Neither of them expressed any surprise as they saw me beginning to take down the tent, but gave active help in again packing our stuff into the canoes.

"Say," said Phil, as several hours later we came in sight of the half-breed's hut, "there's no need of saying anything about our caper to anybody. That old half Indian never says three words at a time, and Dan needn't know we've been away."

We all agreed to his suggestion. Dan came rather late in the day, and favored our proposition to remain where we were until the next morning. Then, to our great relief, he did not go up the stream, but selected a spot for our camp on the border of the lake a few miles from the half-breed's dwelling.

One day very soon afterward Dan led me a long tramp through the thick woods, coming out at length at the very spot where we had camped that night. Even with the July sun beaming upon it my head swam a little as I recalled the terrors of that night, while my heart swelled with thankfulness that my two young brothers had escaped the threatening danger. Not a word did I say to Dan as I trod over the familiar ground.

He began carefully following a track made evidently by clumsy, heavy feet. Broken bushes, torn herbage, and spots of dried blood marked it, and as I followed the hunter around a rock he stopped with an exclamation of satisfaction.

"Humph! I thought we'd find him."

There lay an enormous black bear. Very composedly Dan addressed himself to the skinning of it. As he rolled the skin into a bundle and strapped it upon his back he turned to me with a quizzical smile, saying:

"You did that pretty well."

"Did what?" I asked.

"Shot that fellow."

Then, to my amazement, he gave me an exact account of all that had taken place that night, but it was a long time before I could persuade him to tell me how he had learned it.

The half-breed, on whose taciturnity we had relied, had been left by our faithful old caretaker with strict injunctions not to lose sight of us young madcaps. He had followed us at a distance in his canoe, and at night, wrapped in his blanket, had slept in it not twenty yards from our tent.

Observing Dan's orders not to interfere unless it became positively necessary, he had, with trigger cocked, observed all that went on, and with our first motion toward breaking camp in the morning had silently paddled down the stream.

Well, that's all, boys. For a long time I preferred to hear very little of my night adventure, but as I gradually learned that Dan looked upon me as having done my best I grew to feel a little proud of my first bear. But there is no getting around the fact, you see, that it was more bear hunting me than I hunting bear.

Keep the Girls on the Farm.

JULIA ALLYN.

We read in the papers descriptions of fine farms, of crops, stock, butter, and cheese, and of what the farmer and his boys have done, but not a word of praise for the farmer's wife and her girls. What part did the latter have in this successful farming? Just as important a part as the farmer and his boys. Without the workers indoors, the fine farm would be like a wagon without a horse. Only those who know by experience, realize what there is to be done in and around the house on a large farm, or on any farm, the year around, and especially in the busy season. There is bed-making, sweeping, dusting, washing, dish washing, cooking, — aye, cooking from morning to night, three meals and lunch in haying time, for half a dozen hungry men; and if it be a milk or butter farm there is additional work for a small army, with pans and cans to be washed, milk to skim, and butter to churn.

Who is to do this work if not the girls? Generally not the girl from Ireland, first, because her labor costs too much, and second because she cannot do the work till she has had experience, and about the time she has had that she is tired of the work or of the country, and departs. In rural districts hired help cannot generally be relied on. It is the farmer's daughter, born and brought up on the farm, who can do the work best.

Our girls are wanted just where they are. The boys say "Pooh! if we'd nothing to do but wash dishes life on a farm would not be so bad"; and the girls say "If we could be out in the fields and have nothing to do but drop corn life would be different." Both think they have the hardest of the battle. But it must be admitted that girls have the more monotonous lives. They are not less independent in spirit than boys but their pastimes even on a farm are restricted. Now, to keep girls or boys on the farm they must have something to change, to interrupt the routine of daily toil and drudgery. It would be well even for girls to have the spur of interest which comes from acquiring money, although money may not be the only object, the chief object indeed being to interest the mind and keep it too busy to dwell on the loneliness of self and surroundings.

Let me tell you what one little girl did and how recreation and a little money came to reward her. Living on a farm within a few miles of a large city, one day, sitting by the roadside she heard some ladies driving by in a fine carriage exclaim, "What beautiful flowers! See! The fields are full of them!" The speakers referred to the yellow daisies and the white daisies, the farmers' pests. The little girl began to think about the daisies and said to herself, "If they think they are beautiful they ought to have them. I wonder if other people think they are beautiful!" She thought of this so much that the next time she went to town she asked an acquaintance who kept a fruit store if anybody would buy daisies. He said they might and she could offer them for sale in his store. The child made bouquets of daisies and this led her into the fields and woods for other flowers. These all sold beyond expectation. Considerable money came from the venture but better than all, perhaps, was the contented spirit it brought to the seller.

Flowers are always in demand. If some of the common wild flowers, generally to a great degree unknown in cities, were found at a fashionable florist's, high prices would be paid for them. The fields and woods abound in them, and if neatly arranged with ferns, leaves, and vines they would command a ready sale. Many other occupations open to girls might be mentioned, such as raising canaries and keeping bees which could be carried on together with their household duties. The idea of earning something is usually the bait which allures the country maiden to the shops and factories and the evil influences of the crowded city life. Cannot more varied industries be held out as inducements by which "our girls" in their quiet country homes may become self-supporting and consequently more contented.

Our Puzzle Contest.

This month we shall give but one puzzle, as it will require more study than usual, but we shall give five prizes for the five best solutions as follows:

For the first longest list of characters we will give a Rochester extension frame lamp, worth $8.

For the second longest list an AMERICAN AGRICULTURIST telescope, worth $3.

For the third longest list a Weeden upright steam engine, worth $1.25.

For the fourth longest list a mineral cabinet worth eighty-five cents.

For the fifth longest list an AMERICAN AGRICULTURIST jackknife, worth fifty cents.

ANSWERS TO THE JUNE CONTEST.

6. Hallow-allow; raddle-addle; fact-act; rash-ash; avenue-venue.

7. A bird in the hand is worth two in the bush.

8. Mathematician.

9. April showers bring forth May flowers.

10.

C R A B
R I F E
A F E R
B E R E
H A R P P R A M T I L E
A N O A R I M E I B I S
R O I L A M I A L I M P
P A L L M E A D E S P Y
R O T A
O P U S
T U N K
A S K S

11. Egret, courser, heron, kinglet, hagdon, tinamou, stonechat.

THE PRIZE-WINNERS FOR JUNE.

First prize, F. L. Sawyer, Orillia, Ont.

Second prize, Ella Schlichter, Sterling, Kan.

Third prize, W. H. Danforth, Worcester, Mass.

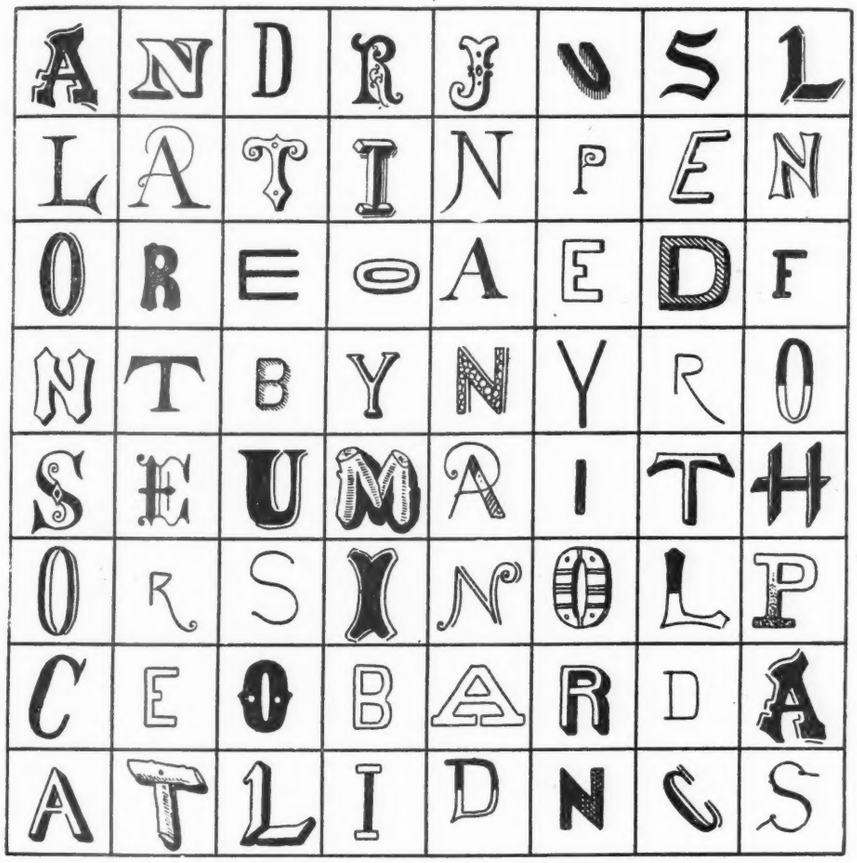
Fourth prize, Sadie F. Gedney, 193 West Tenth street, New York city.

Fifth prize, Frederick Hargraves, Gardiner City, Oregon.

17. SHAKESPEARIAN PUZZLE.

Find the largest number of Shakespearian char-

acters in the illustration. In spelling out the characters, begin at any square, and spell in any direction, using letters in squares joining each other either above, below, at the sides, or diagonally, but not using the same square twice in one word.



SHAKESPEARIAN PUZZLE.

The same letters can be used in different names, however. That is, if you use A for Alonso you can use it again in Antonio, and so on.

A Barnyard Ghost.

AGNES CARR SAGE.

"Run out, Prissy, to the old barn, and see if you can find a few eggs. There are only three in the cupboard, and I want to stir up a trifle of cake to offer Uncle Seth's folks when they drive over to-morrow." Then, as the usually obedient girl did not move, "Well, what are you lingerin' and loiterin' so for? Don't you see I'm waitin'? Take the lantern and start at once." Energetic Mrs. Butterfield spoke sharply, but still little Priscilla hung back. "O, ma, she pleaded, "need I go? I'm afraid of the old barn after dark. Claus says there are ghosts there; that it is haunted."

"Haunted! stuff and nonsense! There's no such thing as ghosts; and if there were they'd likely be in better business than stalkin' round that tumble-down shed. So don't let me hear any more of that silly black's foolish gabble, but mind me at once," and the practical woman almost pushed the trembling lassie out into the fast-gathering night.

Divided, then, between her superstitious terrors and the fear of her mother's displeasure, timid Prissy made her way to the ancient building, which since the erection of a fine new stable was used only as a receptacle for farming utensils, and occupied merely by rats and mice and a few stray hens, while Farmer Butterfield threatened to pull it down the coming fall. But five minutes later she came flying back, pale to the very lips, and dropped in a frightened little heap on the kitchen floor.

"Land sakes! What ails ye now?" cried Dame Butterfield, more startled than she would like to confess by the child's hysterical sobs and nervous tremors as she gasped, "Oh, it's true! every bit true. There are spooks there, just as Claus said. I heard them flap, flap, flapping, and when I opened the door a monstrous black creature bounced right into my face. Ugh! I can feel it now," and she buried her head in her apron, completely overcome by the remembrance.

Now her mother was really tender- and kind-hearted, so she consoled the poor little maid as best she could, and said no more about the eggs; but she was seriously annoyed, and determined to take the colored man severely to task for frightening the child in this manner. When, therefore, the rest of the family returned from a church meeting to which they had been driven by the old negro she was as good as her resolution; and truly the worthy housewife's tongue was as ready and efficient as her capable fingers.

Small satisfaction, however, did she win from Claus, who, when she had ended her voluble lecture, would only declare: "Well, I mighty sorry to scare little missy for sho'; but it am de gospel truf all de same. Dat ole barn is ha'nted, and I hab heard de spookses a-cuttin' up deir fandangoes dar many and many a night."

So the condemned building began to be looked upon with suspicion, though by day it was the most matter-of-fact, commonplace spot imaginable, and a favorite resort of the feathered barnyard ladies. But at night, when the door was shut and fastened, strange noises certainly proceeded from within, and it became a fascinating amusement to the three children, Prissy, Tommy, and little Belle, to take hold of hands and start down, in the gloaming, to listen outside to the mysterious thumpings, which sent electric thrills and shivers careering up and down their spinal columns. Not for worlds, however, would one of them have ventured there alone; while Prissy's adventure on that memorable Friday night when she went for eggs grew more and more startling at each recital. Indeed, she at length began to fancy that the dusky monster she had beheld was adorned with huge claws as well as wings, and great eyes like flaming coals of fire.

So things went on for several weeks and until Tommy became infected with a new craze. That summer the district school was taught by a clever young fellow fresh from college, and he had instituted a museum, in which all the boys were deeply interested, willingly giving up much of their playtime to ransack fields and woodlands in quest of novel "specimens." Tommy was one of the most enthusiastic, and, having rigged up a butterfly-net, devoted many hours of his holiday time to hunting those radiant winged denizens of the air. One warm Saturday morning, therefore, he set forth in pursuit of a gay beauty which he was particularly anxious to add to the collection. But the butterfly was wary and long evaded him, fluttering tantalizingly just out of reach until at last it floated in at the open door of the old barn and disappeared behind a bin.

"Ah, ha, now I have him!" exclaimed Tommy, tumbling excitedly after, and clapping down his net in the dark corner where he felt sure his victim must have alighted. But a low squeak made him jump. That could not be the butterfly, surely! Boldly grasping the net, however, he felt some object within and, quickly bearing it to the light, discovered struggling in the meshes not the painted idler of the meadows, but the very biggest, blackest, ugliest horseshoe bat he had ever beheld.

"Jiminy crickets!" he screamed in amazement, "What a monster! and Oh, what a joke! For I bet my boots this is Prissy's ghost."

A moment later, then, Priscilla, Belle, and the gray pussy-cat were startled by loud boyish shouts and peals of mocking laughter, and rushed to the door to see Tommy holding his sides with merriment and pointing to a dark object which was flopping wildly about in the garish sunshine, which made it as blind and helpless as a ground-mole. "Ha, ha, ha," he roared. "Look at your spook, Pris. Nothing but a bat, a miserable, dirty bat! Oh, what awful geese girls are!"

"Well, you didn't dare to go into the barn any more than I did, if you are a boy," retorted Prissy indignantly, and covering up her curly locks, for she, like many others, was imbued with the silly and entirely false theory that *Chiroptera* have a peculiar fancy for hair, while bonny Belle, dancing gaily out into the yard, chanted,

> "Bat, bat, come under my hat,
> And I'll give you a piece of candle-fat"

His batship, however, paid no heed to this hospitable invitation, and he was soon dispatched, while further search revealed hundreds of his family hanging up in the rafters or hidden away in secluded corners of the old barn, waiting for the shades of evening to come forth in quest of insect food and companionship with one another. None, though, were as large as the one caught in the net, and as old Claus surveyed its velvet wings, prominent ears, and sharp teeth he muttered: "I 'low he am de king spook, and he look like a chile ob de debbil sure 'nuff."

So the butterfly fluttered lightly away to safe pastures, and lived out its little summer life, while

the huge bat—which was really a very fine "specimen"—took its place in the school museum, and the barnyard ghost was exorcised forever.

Flowers of the Cape of Good Hope.

The British Colony of the Cape of Good Hope at the south of the "Dark Continent" has been famous for its wealth of flowers from its earliest discovery, and especially is it noted for bulbous plants. There are few countries in the world where in so limited an area Flora has so lavishly scattered her treasures broadcast. Not all the districts, however, are so highly favored, for some are almost wholly destitute of flowers or trees. Dreary, waterless plains with nothing but sparse, coarse grass and low scrub extending over large tracts, depressing to horse and rider, are but too often met with. The advent of the "Iron Horse," brought in by the pressing need of better transit than the old lumbering twelve-ox wagons to transport the hordes that flocked to the diamond and gold mines, has not been an unmitigated blessing, here as elsewhere, especially to the botanist. Vast tracts of well-wooded land have been laid bare that formerly in their seclusion abounded in game, both furred and feathered, and were ablaze with floral loveliness. Early in the sixteenth century, when under Dutch rule, numbers of beautiful bulbs were sent to Holland. The naturalists who accompanied Captain Cook when they touched at the Cape were struck with the vast botanical riches of the place. In consequence of their reports Francis Masson was sent from Kew gardens in 1771, and he made large collections, which brought Cape flowers into notice both in Europe and America.

In the place of daisies are numerous species of *Arctotis*, *Calendula*, *Tagetes*, *Gazania* and other *Compositæ*. One of the trailing Tagetes is known here as Cape marigold, and with its bright yellow flowers and whitish foliage presents a type of the flowers of most of the genus, only the others stand erect often two feet high. The stems of the Arctotis are fleshy and sweet to the taste, and children chew them. Close to these flowers grow many species of Oxalis, red, pink and yellow, the wood sorrels. Some are shrubby, others low on the ground; a few have esculent roots.

Toward Christmas, Everlastings abound; purple and yellow *Xeranthemums*, *Helipterums*, and others, are gathered by armfuls for house decoration, and pretty pink and white *Gnaphaliums* grow in every rocky cleft. As you are slowly walking along collecting your treasures you are suddenly arrested, for the air is filled with fragrance from some unseen source, which soon is discovered to be the white flowers of the climbing Asparagus. Yards of it are taken home to enwreath the pictures, though it is difficult to realize it is Christmas day when the sun shines brilliantly and the thermometer is in the nineties.

YANA, Albany, Cape Colony.

Florida versus Manitoba.

Mr. Richard Waugh, of Manitoba, seems to think that the northern limit of production secures the most perfect vegetation, as well as superior animals and men. This is doubtless true of many vegetables and cereals that can mature in a short season. In high latitudes where the sun shines from sixteen to twenty-two hours during the day in summer, and the mercury gets up to 100° and 120°, the ground does not cool off, hence, vegetation gets a wonderful stimulus, other things being equal. In such climates short-lived vegetation may be expected to attain its greatest perfection, animals must be provided with a great amount of fat, food stored away to be burned up in the system during winter, to keep up the normal temperature of the blood. The animal must labor hard to eat and digest food and again to burn it up in winter to keep from freezing to death. It must wear out and die sooner than in a country where half of that labor only is required to sustain life. What is true of animals is true of men, and we must look for the perfect specimens of both farther south.

In this part of Florida, four hundred miles south of Georgia, the sun shines eleven hours during our shortest days, and thirteen hours during our longest days, and the extremes of temperature between our coldest mornings in winter and hottest days in summer are 50° to 94°. Here the sugar cane grows all the year and turns out one-third more sugar per ton than in Louisiana, where the crop is cut short by frosts. The same is true of rice and some other crops. Our vegetables here are mostly grown in winter, when the temperature varies from 50° to 84°, and are nearly twice as long in maturing than in Minnesota. They may not be as crisp as those grown farther north, but are certainly finer flavored and superior for food. The death rate here I find to be not more than half what it is farther north. I have lived fifty-nine years in the North and six years here, winter and summer. You may call me cranky, if you like, but I say a man coming here from Illinois will lose from ten to thirty pounds in weight and yet be in better health. We can do as much, if not more, manual labor any day of the year here than a man can in Illinois under the most favorable conditions.

DR. L. C. WASHBURN, Lee Co., Fla.

Agriculture in Persia.

It is surprising what a little is known regarding agricultural affairs in Persia, although the country presents many very interesting features from the agriculturist's point of view. The country is represented by travelers as being either a miserably barren and unproductive land, or else a veritable El Dorado that only wants a spade to be put in the soil to bring forth abundant crops. Few people when they go to Persia travel outside the beaten track of the telegraph wires and high roads, and, therefore, they do not get a correct idea of what is going on in the villages and smaller towns.

There are few countries where a greater variety of soil and agricultural produce is to be found. For instance, two or three days' ride will take the traveler from the semi-tropical rice swamps of Massanderan to a mountainous district displaying the most luxuriant vegetation, while another day's ride will take him into an immense sandy desert, where it would be well nigh impossible to produce the smallest fragment of fruit, vegetable, or cereal. In some parts rice is grown in considerable quantities; tobacco and cotton are also cultivated; while jute and fruit are successfully raised, and are all important articles to the cultivators. There is also in the favored parts of the country excellent pasturage for cattle, the Khorassan wools being well known for their excellence.

One of the drawbacks to the agriculturist is the absence of a good water supply. The Karun is the principal river, and it has many tributaries. There are also innumerable underground sources, and the peasant farmers display great ingenuity in tapping these supplies by means of elementary irrigation works. The traveler in Persia will invariably see long lines of small mounds of earth, at about thirty yards apart, radiating away from the villages to the high ground on a hill. These mounds are often a mile, and sometimes six miles, long, and mark the underground tunnels which, coming to the surface in the fields round a village, pierce to a considerable depth in the hillside, where a supply is found. It is wonderful how these tunnels are made, for they are barely large enough to allow a man to work inside. The various heaps of mold show where the excavated earth has been raised by a rude sort of winch or windlass. These peasant farmers are extremely patient and hard working. An agricultural laborer receives about ten cents a day, including his meals, or eighteen cents without; but sometimes he gets twenty-six cents when the working day is exceptionally long. In England a farm laborer receives from $3.72 to $4.00 a week, while it is reckoned that the purchasing power of money in Persia is quite double what it is in England. Indeed, it has been said that a Persian cultivator could bring up a family and live fairly well on about $17 a year.

The cultivation of olives for the production of olive oil is carried on very extensively in Northern Persia. The district where the olives flourish contains from 80,000 to 100,000 trees, which yield from six to nine pounds of olives per tree yearly, while the average gross yield per annum is 750,000 pounds of olives. It is estimated by experts that the quantity of good olive oil obtained from the Persian presses is seventeen per cent of the olives, which gives according to the above estimate 127,000 pounds of good olive oil. The olives are gathered in the late autumn and at once stored in large bins. They are left to ferment until the ensuing March, when they are then spread out to dry on the flat housetops. When perfectly dried they are again packed till they ferment, when they are trodden by men in the same way as grapes are treated. After being boiled they are crushed in a rough sort of press, consisting of two flat stones, the oil falling into a receptacle placed between the stones. It is now proposed to introduce the French system of pressing and refining to save the waste that follows the present method. The value of the oil after a good harvest is twenty-eight cents per bottle of two pounds weight; the value after a bad harvest is seventy-five cents. This is simply the value of the best oil as it is produced.

C. PELCHA, Teheran, Persia.

Cotton Culture in Russia.

In St. Petersburg, Russia, there is a great business corporation known as the Foreign Trade Company. About two years ago they determined to inaugurate an effort to improve the cotton culture of Russia. They secured the services of a representative South Carolina cotton planter for the purpose of having him go to Russia and superintend a model cotton farm in which the government was interested, something of an experimental station, as it would be called in the United States. This governmental farm consisted of seven hundred acres and was located near Samarcand, where the towering snow-capped Himalayas are ever in sight. The station was in charge of the American. Under him were two young Russians, wide-awake and intelligent and eager to learn the mysteries of the successful cultivation of the fleecy staple. About three hundred natives were employed to do the labor of the farm.

The community of Samarcand occupies nearly a central position in the cotton-growing region of Middle Asia. This cotton belt embraces Turkmenia, Turkestan, Furgana and the belt of country extending to the east and west of these provinces and lying between the 38th and 40th parallels of latitude. This section is entirely under the control and ownership of Russia. The soil is a rich alluvial loam, with an intersprinkling of decomposed lava rock. Here the staple grows rapidly and yields largely per acre. A system of irrigation is indispensable, and without it cotton cannot be grown in that territory.

A quarter of a century ago Central Asia was occupied by the Russians, and finally annexed to their government. When they invaded this territory they found the tribes of natives growing cotton there. The methods in vogue could hardly be denominated cultivation, as the cotton seed was sown broadcast and not planted in rows as is the case in the Southern States. The rudest and most primitive implements were employed. As well as they knew the Russians have stimulated the cotton growing industry, but introduced no new machinery and adhered to the old methods of culture. Consequently, the production of the staple underwent no improvement until the introduction of American methods. The native cotton of Central Asia is inferior in grade, but when grown from American seed compares very favorably with the cotton grown in this country, especially the upland short staple cotton which appears best adapted to the soil and climate of the region. The climate of the Asiatic cotton belt is not unlike that of the Southern States, the seasons being about the same, except that the summers are somewhat shorter and the winters a few degrees colder.

The two young Russians were apt pupils, but the natives learn very slowly, yet in the course of time the American methods of raising cotton will supersede the primitive methods formerly in vogue in the cotton belt of Central Asia. It will, however, be many years before the natives can be induced to abandon their rude and unsatisfactory implements and use the improved modern tools with which the Southerners make their crops. The production of cotton in Central Asia will never attain unusually large proportions. The population of the cotton area is exceedingly dense. The land is, therefore, too much in demand for residence to be taken up in vast cotton plantations. There never will be any competition between Central Asia and the Southern States of America in producing the cotton supply of the world. There is not even a likelihood of sufficient cotton being produced to supply the Russian spinners, who have to call upon the South and Egypt to supply the deficiency.

The Asiatic cotton is cleaned by American gins, and baled by American presses, the Russians having displayed no inventive ability that will

enable them to surpass the work of these American inventions. The Russian cotton bales are smaller than those of America, and weigh only 250 pounds. They are, therefore, more easily handled than the bulky packages in which American cotton is put up and shipped. The Russians observe great care and neatness in putting the staple upon the market, burlap cloth being used to cover the bales instead of jute, and the entire package is covered, the edges of the bales being sewed together, making it impossible for the vegetable fleece to become soiled. Therefore, their cotton reaches the market in a much cleaner condition than the American staple.

E. O. EDWARD, Samarcand, Russia.

From the West Coast of Norway.

Nearly the whole west coast of Norway consists of nothing but mountains upon mountains, with precipices mostly to the west. Long and narrow fiords penetrate the land. Flat fields are rather the exception, and even where they exist their extent is very limited; but wherever a mower or other implement can be used to advantage it will be met with. But, as says the German author, Krauss, in his work, "From the Baltic to the North Cape," "it has been a thousand years struggle for the people to gain a foothold on the narrow shores of the fiords and in the precipices of the glens."

At a height of 2,500 feet there are large tablelands with abundance of grass where thousands of cattle pass the summer under the care of women, who at the same time are engaged in butter- and cheese-making. These pastures are often far distant from the farms, and not rarely two or more days are spent in bringing the cattle to these lands. In the autumn the products are carried on horseback to the farms, where the home people are busy the whole season from dawn to sunset with making hay, of which much is needed during the long winters. It is then a struggle for existence. The grass is hand-mowed, and very often it has to be gathered in places high up in the mountains where the feet hardly find a support, and risk of life accompanies every step, and where disasters are by no means seldom. Here bunch by bunch is gathered until a bundle inclosed in a network sack is made up and precipitated to the valley below. Often the laborer spends whole weeks haying on the slopes, carrying with him his provisions for the whole time, and spending the nights under any sheltering rock. In the illustration herewith are seen two men, who have left their distant farm home in the morning, in a boat, and will return with a cargo of grass at night.

W. D. KROHN, Bergen, Norway.

NORWEGIAN MOUNTAIN SCENERY.

Land Cheaper than Fertilizers.

Perhaps no one thing is of so much importance to successful farmers as fertilizers. Every farmer knows that his land is not producing near what it ought. The average farmer can manure but three or four acres yearly, hence it is a long time in getting around the farm and those fields farthest away fare the worst. Yet it is sometimes asserted that it is comparatively an easy matter to raise a maximum crop upon any soil, but even here discretion seems to be the better part of wisdom. Risk and all considered, will it pay? This is the question. In truck farming I can easily produce more than I can sell without any serious labor, but with an outlay for fertilizers at fifty-five dollars per ton. Land in this county can be bought at from twenty to forty dollars per acre, and very good land too. It would be a rare sale when a farm sold so that an acre would equal in value one ton of any standard commercial fertilizer. I believe it to be for my interest to-day to buy land at these figures and stock with sheep. Use it exclusively for that purpose, winter them on the home farm, and let commercial fertilizers alone except in small quantities. Or turn one-half of our land into pasture and use the remainder. Clover hay can be raised upon any upland farm at five dollars per ton. Timothy is a market hay, and the most of the men who attempt to raise it for market will find themselves growing poorer every year. I cry not for higher prices, but would like to see the day when lamb would be as cheap as pork, and the price of all kinds of labor reduced to proper relative values.

J. E. DUBOIS, St. Lawrence Co., N. Y.

Fruits, Potatoes, Winds and Earthquakes.

Sonoma County, California, lying near the coast, always gets plenty of rain when the back counties are suffering with drought. Our fields, orchards and vineyards are flourishing. Most of the farms here are devoted to small fruits, and contain five, seven, ten, fourteen or twenty-five acres. These small farms, well tilled, and having a good assortment of fruit, always bring in a good income; if peaches fail, as they did last year, then apples bring a good price; English gooseberries do well, at eight cents per pound. One-fourth of an acre will yield forty dollars worth of berries. Potatoes are an important part of our products; to see the loads and loads go by one would think the whole of the United States were to be supplied.

Some farmers turn their attention exclusively to the poultry business—where it is well understood the returns are very satisfactory. One man, having a poultry ranch of ten acres, reports a net gain of six hundred dollars per year. We have a fine market for everything we raise, being only fifty miles from San Francisco. Now, just to give the picture proper shading, I will add that we have plenty of fog and wind and occasionally an earthquake.

M. E. H., Petaluma, Cal.

A Manual of Country Life.—The AMERICAN AGRICULTURIST has increased steadily in usefulness, interest, and the range of its topics. The annual volume is a manual of country life.

REV. L. H. BAHLER, Ulster Co., N. Y.

Nothing Can Fill Its Place.—The AMERICAN AGRICULTURIST occupies a place in a farmer's family that no other paper can fill. We cannot get along without it.

C. H. RANDOLPH, Snohomish Co., Wash.

FARMING IN FOREIGN LANDS.

In European Russia there are 223 beet sugar factories.

One-seventh of the landowners in Great Britain are women.

Phylloxera in New Zealand is alarming the fruit-growers there to a considerable degree.

There is a pear orchard or garden in Jersey, Channel Islands, containing 60,000 pear trees.

In 1888-89 there were 12,886 acres of vineyards in Victoria, Australia, and 1,209,442 gallons of wine were produced.

According to the last census Calcutta, the capital of India, is inhabited by 30,400 Christians of all nationalities.

A mahogany tree lately cut in Honduras made three logs, which it is reported were sold in Europe and brought $11,000.

In 1873 there were not 150,000 acres of orchard in Great Britain; now there are 202,305, and the orchard area increases yearly.

The United Planters' Co., of Ceylon (Limited), has started with a capital of $1,250,000. It has acquired 10,000 acres of tea at different elevations.

India raises one bushel of wheat per head of her population, the United States over seven bushels per head, and South Australia nineteen bushels.

Of 600,000 foreigners in the Argentine Republic there are said to be 280,000 Italians, 150,000 French, 100,000 Spaniards, 40,000 English, and 20,000 Germans.

Forty millions of humming birds, sunbirds, orioles, gulls, sea birds, wax-wings, birds-of-paradise, and fly-catchers are annually used in decorating women's hats.

A Cheviot ewe in Dumfries, Scotland, gave birth to five lambs in May. Three other ewes in the flock have dropped triplets which makes fourteen lambs to four ewes.

The saltest body of water known is the Lake of Urumia, in Persia, situated more than 4,000 feet above sea level. The water contains nearly twenty-two per cent of salt.

The flax crop of Ulster, Ireland, is reported as looking well. The acreage is probably twenty-five per cent less than last season, although in some districts the usual amount has been planted.

A case of rare occurrence recently happened in England. A heifer that was twin with a bull dropped a bull calf at full term. What makes the case more remarkable is that this heifer was from a cow that was also a twin.

In New South Wales, and in some other parts of Australia, "foul brood" is becoming the bane of bee-keepers. An act of Parliament has been passed by the putting into force of which it is hoped that the disease may be stamped out.

Farmers around Liverpool, England, complained bitterly of the enormous quantity of potatoes sent in from Ireland during May. The shipments were said to exceed any ever made at that season of the year. Even many of Mr. Balfour's seed potatoes were sent over.

Over one million acres more of wheat were sown in the Punjab, India, than last year, and the yield will reach sixteen million bushels. The increase in the area is almost entirely on unirrigated lands. There was an abundance of rain which helped the late sowed grain.

Plinlimmon, the St. Bernard, is the biggest dog known. At the Birmingham show, England, on the morning of judging, November 27, 1886, he weighed 214 pounds. He stands thirty-five inches high at the shoulder. He was sold in 1888 to J. K. Emmett, of Albany, N. Y., for $5,000.

The Sahara, the largest desert in the world, is about 3000 miles in length, in average breadth about 900 miles, and a total area of about 2,000,000 square miles. Parts of it could be made very productive if a liberal supply of water for irrigating purposes were secured by means of artesian wells.

Crows have done much damage to the crops in Marigny—Champigny, France. It is estimated that they eat from forty to sixty per cent. of the seeds sown, besides great quantities of young plants when just coming up. In winter they go for the corn stacks and do more damage than rabbits.

The population of the Caucasus is estimated at 6,171,400, of whom 1,217,400 are Mongols, mainly Tartars. Of the whites, 1,854,000 belong to the native Caucasian races, 41,000 are Semites, mostly Jews; the remaining 3,059,000 are Aryans, almost all groups being represented. The Russians number nearly 2,000,000.

A good quality of cotton is being grown in the Valley of the Jordan, and Palestine bids fair to become a strong competitor with other cotton-producing countries for the supply of the European markets. It is thought that with the opening of the Holy Land by railroads a large area of land will be devoted to cotton where in olden times it was successfully produced.

The chief industry of the Amazon Valley, one of the richest and largest in the world, being about 2,000 miles long, is rubber-gathering. This industry, which is quite remunerative, keeps the greater part of the native population at the margins and in the swamps, tapping the trees, where malaria and fever sweep them off. But the work is said to pay immensely for the labor and risk.

The recent harvest weather on the west coast of North Island, New Zealand, has been the worst on record. Roughly speaking the whole of the grain, hay, and grass seed on the coast has been ruined. The losses on potatoes are great, and peas have done badly. Besides causing the farmers heavy loss, the adverse season will be a severe blow to the laborers who depend on harvest wages.

In India the flaxseed grown up to the altitude of 6000 feet is oil yielding. Much has been done by the Indian government to foster flax culture among the peasantry, but with little success. Jute holds the place of flax in popular favor. The great enemy of the flax plant in India is the rust (*Melampsora lini*). The flax fiber, seed, and oil are so little in favor that the bulk of them is exported.

The plan of the Fresh Food and Frozen Storage Co., which does an immense business in Melbourne, Australia, now is to establish creameries in all the good dairying districts in the country. The shareholders are expected to take up so many shares, and supply the milk from 250 cows, or more if they can, all the year round. The milk is to be treated at the creameries, and the cream is to be sent on to Melbourne for conversion into butter.

Waste sawdust and shavings are being utilized by Mons. Calmant, of Paris, France, for the production of fine vegetable charcoal, which is intended to be used for the removal of the unpleasant flavor in the common French wines, and as a filtering medium in distilleries, where it is said to be capable of filtering forty times its volume of alcohol, whereas the ordinary vegetable charcoal of commerce filters less and costs very much more.

A large body of water has been discovered at El Golea, in the Sahara Desert, about one hundred and twenty feet below the surface. It throws up nearly forty gallons a minute at present, and it is expected that the volume will be much greater when more perfect access to the water is attained. The discovery is regarded of high importance, as this is the first time that water has been found in the Sahara at such a slight depth underground.

Artesian well boring is a new industry in the Republic of Nicaragua. The usefulness of these wells cannot be calculated. Every year thousands of cattle die for want of water. Agriculturists in general, and coffee-planters especially, suffer much for this necessary. Only very few coffee planters have water sufficient to wash their berries, and washed coffee brings always from three to four cents more in the market than unwashed.

It is stated that Dr. Lehner, of Augsburg, Germany, has solved the problem of manufacturing artificial silk. The fabric is said to be superior in luster to natural silk, and cannot be distinguished from it; and that a limited company is to be constituted to work the invention. If this is true, and is found to be thoroughly practicable after a fair trial, it will revolutionize the whole industry of producing and manufacturing raw silk.

The sugar plantations existing in the agricultural towns of Santiago, Miraflores, Todos Santos, San José and others, have for years been unprofitable to the owners on account of the paucity of the local demand. The lands cultivated for this purpose are extremely productive, and the planters are now buoyant with hopes, owing to the fact that under the new American tariff they will readily find in the United States a reliable market for their sugar.

The lambing season at the north of Scotland was an unusually good one. The weather was very cold, but free from wet, which is worse on the lambs than the cold. The grass was not as good as usual in the early spring, but the ewes and lambs were in a very healthy condition. Little or no profit was made from feeding sheep during the winter, because of the high price at which they were bought in the fall and the low price of mutton in the spring.

Pleuro-pneumonia seems to be quite prevalent in Great Britain. Twenty-seven fresh outbreaks were reported to the Board of Agriculture for the four weeks ending April 25. Of these, five were in England, eight in Scotland, and fourteen in Ireland. On one farm in the Whitby district, England, twenty head of valuable cattle were killed recently by order of the Board of Agriculture. Other animals on neighboring farms were also killed and buried.

Over 30,000 head of neat cattle and 5,000 horses and mules died of starvation and pestilence last year on the lower Amazon, above the delta. The annual floods were higher than usual, and the small farmers owning the animals could not afford to hire tugboats and barges to transport them from the narrow ridges between the numerous channels of the river, on which the stock was so unexpectedly imprisoned, to the upland ten miles or more back from the valley proper.

The Columbian government imposes the following enormous duties on American goods: Liquors of all kinds, five cents per pound; salt, one and a half cents; tobacco of all kinds, whether for chewing or smoking, ten cents; salted beef, pork, and pigs' tongues, five cents. These import duties are on gross weight, and seriously affect American producers and manufacturers. Cocoanuts, bananas, India rubber, ivory nuts, and South American wood and shells all go to the United States free, and they are the only products of the country.

In India rice is planted and reaped each month of the year. The staple crop, however, is sown from April to June, transplanted from June to August and gathered from November to January. Since rice is almost the only food of millions of the inhabitants, and as there is an export duty on it, comparatively little goes to foreign countries, and yet the amount exported in 1889 was 22,768,229 cwt., and in 1892, 26,774,251 cwt. Reports are not full as to the acreage devoted to rice culture, but the returns already show 37,487,393 acres devoted to rice alone.

In Siam the milling and export of rice gives a larger return of profit for the capital invested than any other industry. At present there are in Bangkok twenty-three steam rice mills, of which seventeen are in the hands of Chinese. Eight new Chinese mills were erected in 1889 and two British. During 1890 two new mills were erected and three more are being built. Many of the mills are lighted by electricity, and employ two sets of men, being thus enabled to run day and night. The most modern machinery is in use, and, although the majority of the owners are Chinese, and very close in business matters, yet they hire the very best European engineers.

The corner stone for a new college of agriculture was laid not long since at Mildura, on the river Murray, Australia. It is one of the irrigation colonies, founded three or four years ago by Chaffey Brothers, and the college is to be called Chaffey College in honor of them. It is the most richly endowed college in Australia, and the lands comprise 16,666 acres, with water privileges. The initial price was one hundred dollars per acre but much of it has since doubled in value, and before twenty years it will probably be worth five million dollars. Irrigation will play an important part in the future of Victoria, and this college will afford facilities for instruction in the constructing of irrigating canals and works.

Lower California, an immense territory of 26,12, square miles, contains only 21,000 inhabitants, of which perhaps 1000 are foreign. As yet it has no telegraphs or cables, and sometimes it is an entire month without receiving news from the outside world. This territory has long been noted for the variety of dyes which it produces, such as orchilla weed, etc., but the tovote tree bark, recently discovered, has come into great demand, and several large shiploads have been exported to Europe. As yet there seems to be but little demand for the article in the United States, although it is cheaper than orchilla and other dyes, producing in its natural state a dark red color, which is quite indelible. It is now collected and sold in the market of La Paz at $1.00 to $1.50 per one hundred pounds, and the supply seems to be enormous.

SCIENCE IN FARMING.

The Father of the Farmers' Institutes.

Robert Clark Kedzie, an engraving of whom is presented herewith, was born at Delhi, N. Y., January 28, 1823. His early training was gained in the public schools of his native town, and filled with a determination to gain a thorough education he started for Oberlin College with little more funds in sight than were required to scantily furnish his humble room. But through those hard and honorable ways known only to the needy and persevering student he finished the course in 1847. Four years later he was graduated with high honors from the medical department of the University of Michigan, and for the subsequent ten years practiced his profession in Central Michigan. During the Rebellion Dr. Kedzie served his country as surgeon of the Twelfth Michigan Infantry, and in 1863 was appointed to the chair of chemistry in the Michigan Agricultural College, an important position which he still fills with great distinction. Along various lines, but particularly that of agricultural chemistry, Dr. Kedzie has made many valuable discoveries that at once proved of great practical value. He was largely instrumental in bringing about the present thorough methods of inspecting commercial fertilizers, which are saving millions of dollars annually to the crop growers. His investigations upon the comparative values of varieties of wheat for flour; the exposure of lightning rod swindles; and the dangerous nature of arsenical wall papers are a few of the many lines of his investigations that have brought untold benefits to the farmers and others. Dr. Kedzie is scarcely less favorably known for his victories over dishonest illuminating oil companies, by which through his inventions of testers, exposures and laws passed and enforced, comparative safety was secured to the consumers. Much of his thought has been concerning matters that pertain to the better health of the people, such as foods, waters and ventilation of buildings, and he has been president of various State and national health associations.

It is, however, as a teacher, in its broadest sense, that Dr. Kedzie is best known. For twenty-eight years he has occupied his present important professorship in the leading agricultural college in America, and has trained up a large number of young men who now occupy high places in the educational field or as investigators in the experiment stations. His work of instruction by lectures has by no means been confined to college walls, and it is to his far-sightedness of and deep sympathy with the needs of the farmer that he has won the enviable title from the people of "the father of the farmers' institutes." Dr. Kedzie is both broad and benevolent; uncompromisingly honest himself, he shows no quarter to those who are otherwise. Naturally large hearted and sympathetic, his own early struggles only served to bring him into closer accord with the working classes, and while he has held the highest offices in many scientific societies, Dr. Kedzie has never lost sight of the practical man, and particularly the farmer. It has always been his delight to have his labors count for the good of others, and in this generous spirit he will reap a great reward.

Gleanings from the Bulletins.

COLORADO, No. 15, pages 24. Two insect pests, namely the codlin moth and the grapevine leaf hopper, are treated and the methods for destroying them given, as also the machines best adapted to the application of the insecticides.

DELAWARE, No. 11, pages 14. In soil and crop tests the main thought was to study methods. The corn experiments, for example, demonstrate that large excesses of the highest grade of plant food can be used without results even on fields prepared and cultivated with special care. Thus the peach tree tests show that results on one farm cannot with certainty be applied to a distant orchard. This is still further shown by the tomato experiments.

MARYLAND, No. 11, pages 38. In the extensive experiments with tomatoes it was found that the yield ranged from two to twenty tons, the best being from the Ignotum. The greater the number of cells in the fruit the greater the percentage of solid flesh. Pot-grown plants exceeded transplanted plants in fruit, and yielded double the others in the first month. Tomatoes should be well manured but not grown in the same soil year after year. Nitrate of soda is particularly valuable for tomatoes, but it is best to use two kinds of fertilizers. Thus phosphoric acid alone is of little effect, but nitrate of soda and muriate of potash together are highly recommended. Tomatoes do not remove as much plant food from the soil as most farm crops, and the refuse from a crop of tomatoes contains a large amount of fertilizers. This should be evenly spread and plowed under.

MISSOURI, No. 14, pages 36. This bulletin is devoted to results of experiments with corn. The late maturing sorts were best. Fermented manure gave better results the first year than unfermented, and less effect the second season. Manure plowed under gave best results. No benefit came from salt, lime, or land plaster. No results with commercial fertilizers warrant the use of these manures. Shallow is better than deep plowing. When planted three feet nine inches each way there is no difference with two, three, or four grains in each hill. Shallow tillage gave a large excess over deep culture. A light mulch of sand, earth, or chaff, and no culture gave as large a yield as the thoroughly tilled areas. Tile drainage it was shown was not in all seasons an advantage.

MICHIGAN, No. 73, pages 16. Kerosene emulsion is recommended for a large number of insects. The formula employed is one quart soft soap, one pint of kerosene, and two quarts of water. This mixes the oil permanently so that it will never separate and will emulsify with cold water. Among the insects treated in this bulletin are the grape phymatodes and several new species of insect pests which are described technically.

MICHIGAN, No. 74, pages 8. The foot-rot of sheep receives treatment. There are two forms of the

DR. ROBERT CLARK KEDZIE.

malady, one contagious and the other sporadic. Treatment for the latter consists in cleansing the feet, applying butter of antimony, and keeping the afflicted animal clean and well fed. The contagious form is caused by a specific poison, and spreads rapidly, the period of incubation being about six days. Care should be taken to not admit newly-purchased sheep to fields until assured that they are free from the disease. The afflicted ones should be kept by themselves and treated with proper remedies.

NEW HAMPSHIRE, No. 14, pages 8. A series of don'ts sums up this bulletin upon ensilage in dairy farming. Don't say you "can't afford a silo." Don't wait until another year. Don't waste money on stone, or cement—a wooden silo is better. Don't believe silage is too watery to be of value. Don't plant Western corn but some sort that will yield ears. Don't forget that ensilage doubles the supply of fodder. Finally, don't throw the bulletin aside.

NEW HAMPSHIRE, No. 13, pages 12. Under the effect of foods upon butter the following indications are seen: Hardness of butter depends much more upon character of food than nutritive ratio. Ensilage produces a softer butter than hay, while cottonseed meal gives a hard butter. The melting point of butter fat is not a good index of the commercial hardness of butter, for there is no definite relation between melting point and hardness. Volatile acids decrease and hardness increases as the period of lactation advances.

NEW JERSEY, No. 79, pages 20. The experiments with tomatoes for 1890 verify the results obtained the year before, namely, that nitrate of soda is a profitable fertilizer for tomatoes. While increasing the yield it did not do so at the expense of maturity when used in small quantities, or large amounts in two applications, but results were otherwise when there was a single application of a large quantity. Therefore, the best effect of the application of nitrate of soda was dependent upon the method of application and the presence in the soil of a full supply of the other food elements.

NEW JERSEY, No. 80, pages 32. The best results in using fertilizers on potatoes were secured when the chemical manures were used in connection with barnyard manure. Kainit was less effective than either muriate, or sulphate of potash, and sulphate did not produce larger yields than muriate. Nitrate of soda did not prove a valuable fertilizer for potatoes. Potash influences the composition of potatoes, and the sulphate in this respect is the most valuable. The best time to apply nitrate of soda to wheat is in the spring, after the plants have a fair start, and in amounts from one to two hundred pounds per acre.

NEW YORK (Geneva), No. 29, pages 20. The results of feeding experiments with fowls indicate that for laying eggs Indian corn can be fed in large quantities, but that the large breeds do not bear the high corn ration as well as the smaller breeds. Exhibition stock require a highly nitrogenous ration. Breeding stock demand a varied ration.

NORTH CAROLINA, No. 77, pages 10. Peavine manure for wheat is the cheapest and most effective of all fertilizing applications. In 1889 the average increase due to peavines was ten bushels, and in 1890 sixteen bushels.

OHIO, No. 1 (Vol. 4), pages 36. In the experiments with corn it is again shown that more and better grain can be raised where the stalks average twelve inches apart than when separated a less or a greater distance; hills or drills do not matter. The results of four years' testing fail to show any marked difference in yield from seed taken from any particular locality on the cob. There are some advantages in shallow culture. The use of commercial fertilizers on corn at present prices is likely to result in loss. A list of the best sorts of corn is given.

TENNESSEE, No. 2, pages 22. From results of experiments with peanuts it is considered that the best fruit is to be obtained only by careful attention to details, such as selection of seed, preparation of soil, and good culture. The peanut is one of the richest vegetable foods known. The hulls are of very little value as a fertilizer, but the hay is about equal to clover, particularly for cattle. A moderate use of commercial fertilizers is profitable, and experiments with manures should be made to determine what and how much plant food it is wise to apply.

VIRGINIA—No. 9, pages 18. By means of several engravings this bulletin shows how to produce, set out and care for tomato plants. Transplanting plants, at least once, is strongly recommended, as by this means the root system is made stronger and productiveness and earliness are enhanced. In the field make furrows at proper distances, place the plants against the straight side and cover with a hoe. The Early Jersey is considered the best early sort, and of the "tree" varieties the Dwarf Champion has particular value. Of the large fruited sorts the Ignotum is recommended and the Golden Sunrise of the yellow sorts. Among the new introductions Prelude and Matchless are the most promising.

WISCONSIN, No. 27, pages 16. Some of the conclusions from feeding whey are as follows: Pigs could not be maintained on whey alone, but whey added to cornmeal and shorts produced a marked saving in grain for a given gain. This was true up to ten pounds of whey to one of grain. It was found that 760 pounds of whey saved 100 pounds of the cornmeal and shorts mixture. Whey, therefore, on this basis is worth eight cents per hundred pounds. Shorts, pea meal, and oil meal, or like feed, should be mixed with whey, the proportion increasing as the animal approaches maturity.

WEST VIRGINIA—No. 12, pages 12. Weeds have occupied the attention of the station considerably, and particularly the Canada thistle, which is illustrated by two full page photo engravings. The order is to cut and destroy all plants like the pictures.

A Delightful Companion.—I have found the AMERICAN AGRICULTURIST to be a delightful and instructive companion for many years. If necessary, my family and I would cheerfully make a real sacrifice before we would be deprived of this valuable magazine.

MRS. MAGGIE E. MILTON, Marion Co., Ky.

Power from Aluminum.—H., Salem, N.C.: When we obtain power from a steam engine or from a battery it is produced by the consumption of fuel of some kind. In the battery the fuel is a metal which is consumed by means of acids or other chemical solutions. Under the boiler of the steam engine coal is the substance consumed, and we use oxygen of the air for the purpose. While electricity is somewhat more economically produced from a given weight of metal than steam power from coal, yet the cost of the materials is so much greater that there is no comparison as regards the commercial results. Even if iron could be used in a battery it would show a cost of at least two cents per pound, as against coal at four pounds for one cent, and to burn the iron we should be obliged to use some chemical, which would still further increase the cost, while we burn the coal with air, which costs us nothing. At the present time the only metal practically used in batteries is zinc, which costs at the least market price in quantities from six to eight cents per pound. In other words the fuel for the battery is twenty-four times as expensive as the fuel for the engine. If aluminum were the metal consumed its cost would be reckoned by dollars instead of pennies.

Good and Bad Dogs.—Emery P. Robinson, Shelby Co., Ohio, writes us: Allow me to thank you for publishing George A. Stockwell's able defense of dogs. Some editors of agricultural and religious journals are fanatics on the dog question and print every bad act of dogs about which they can learn, and allow no good word to come into their columns in defense of these noble animals. Some of them even advocate the most inhuman practices in respect to dogs. Dogs, like men, have faults, and in both the trouble is largely in the education.

Indelible Ink.—W. H. Littlejohn, Grand Rapids Co., Mich.: An indelible stencil ink, if for general marking, is not difficult to make if we do not insist too strictly upon our definition of "indelible." If it means that the marking must resist rain and the ordinary wear and tear to which it may be exposed upon a box, then the result is easily obtained by adding a little linseed oil to the mixture of turpentine and lampblack which is commonly used for the purpose. If the ink must be still more durable the proportion of oil must be increased, and some "dryer" added. This is practically a black paint, such as would be used for outdoor work, but with a rather large proportion of dryer. The latter is necessary in order to make the ink dry as quickly as possible. Unfortunately the faster it dries the less durable it is. Black asphaltum varnish, thickened with a little powdered color till it has the right body could be used for some purposes to good advantage. For marking clothes the best way to get a good ink is to buy it. There are plenty of recipes to be had, but unless one has scales and grain weights, and is accustomed to putting up prescriptions, or to chemical manipulations, it would not be easy to prepare an ink from a recipe. The basis of most of these inks is nitrate of silver.

Dutch Standard for Sugars.—E. W., Dawson Co., Neb.: The so-called Dutch standard by which the purity of sugars is sometimes determined is a color test, or series of color tests, prepared and sent out by the German government. The color is produced by the use of a certain quantity of caramel for each number. We have been informed that nothing commonly sold is as dark as No. 16. About New York nothing is usually found in the groceries which is darker than ordinary manila wrapping-paper, and many of them do not keep anything which would not pass for white.

Preservation of Posts.—George A. Hall, Paulding Co., Ohio: It is somewhat difficult to say whether tar, or charring forms the best preservative for oak posts that are to be put three feet into the ground. The tar has some advantages, if put on thick, in keeping out the water. Charring until the outside becomes a mass of charcoal is good, because the charcoal is antiseptic. It of itself prevents decay, and is practically indestructible. If the posts could be charred in such a way that the charcoal was continuous, and the wood did not show through at any point, it would be one of the most satisfactory methods for protection. To keep the earth from actual contact with the end grain of the wood it might be well, if the posts are round, to put an old tin can over the end of each post after it had been tarred or burned. There seems to be a question of the soil as well as of timber and of the method of preserving. In some situations six or seven years is a good old age for a post, while in others it may last a lifetime. On the score of economy we should incline to charring. Unfortunately the best processes for preserving wood are not sufficiently cheap or certain to enable them to be generally introduced. The tar for dry wood is as good as anything for keeping out moisture. After this has been done we must look to the natural durability of the wood for the remainder.

Apple-twig Borer.—S. S. Mills, Knox Co., Neb.: The small, slender dark brown beetle, not quite a half-inch long, which bores into the twigs of your apple trees, entering just above a bud, eating out the pith and soft wood, thus causing many to die and break off, is the widely distributed pest known as the apple-twig borer, or the *Bostrichus bicornis*, of Weber, and the *B. bicaudatus* of Say. This insect appears to be most abundant in the Western States where it attacks not only the apple but the pear, peach, cherry, and perhaps other kinds of fruit trees. In Colorado, it has of late years been a great pest in the young orchards destroying the young growth, giving the trees the appearance of having been struck with blight. The only remedy thus far discovered is to cut off the infected twigs and burn them while the beetles are at work. Sometimes two or more beetles will be found in the same burrow, but in most instances there will be only two, one of each sex.

Green Fly.—W. W. C., Montgomery Co., Tenn.: The insects infesting your fruit trees are the aphis or green fly referred to under the name of "Apple-tree Aphis," in our answer to another subscriber, which see.

A Sawmill by Horse-Power.—F. S., Poluski City, Va.: There is no reason why a small sawmill requiring four- or five-horse power might not be driven by horses as well as by a steam engine. In the northern part of the United States horse-power sawing and threshing machines are in common use. It is a well-known fact that to keep a wood-saw running a five- or six-horse-power engine is required to do the work which two horses on a railway horse-power can accomplish. The horses, however, cannot keep up their utmost exertion for any great length of time. After running their heavy sticks for a few minutes they are usually obliged to rest. A horse can produce for a few minutes a power from two to four times as great as he is able to keep up for ten hours.

The Delaware Strawberry Crop.—This year's strawberry crop has, in several respects, been one of the most satisfactory for years. The season in the beginning was rather wet, but later was very fair, and the berries were shipped in good order. The quality, also, was good. Perhaps never before in the history of strawberry culture were so many large and fine berries shipped. This was due to two causes conspiring to the same end. First, new and large-sized varieties have been introduced, and taken the place of old and smaller ones. Then the culture is much better than in former years. It has been fully ascertained that there is no pay in poor or indifferent culture. Hence, our growers, for their own sakes, cultivate well. Fertilizers and high tillage only produce a satisfactory return. The reports show that there were shipped over the roads of the peninsula 3,550 carloads, equal to about 24,000,000 quarts. These brought on an average ten cents a quart, or $2,400,000. This sum was distributed as near as may be thus:

The growers received	$960,000.
The railroad and commission men	960,000.
The pickers	480,000.
Total	$2,400,000.

Apple-leaf Flea Beetle.—Farmer, Lawrence, Kan.: The small green, leaf-eating flea-beetle, which you find in such abundance eating the leaves of your young root grafted apple trees, is known in entomological works as *Graptodera foliacea*. It belongs to an extensive family of leaf-eating beetles, but until within a few years confined itself to certain coarse weedy plants, generally known as evening primroses; consequently attracting but little attention, except by collectors of insects. Of late, however, several instances of its attacking young apple trees have been reported from the West, and, as with most other species of leaf-eating insects, spraying with London purple, or Paris green has been found the most efficacious insecticide. We would advise giving these poisons a trial on your apple trees if the little beetles continue their ravages, or should they appear another season.

Bumble or Humble Bees.—Subscriber, Lyons, N. Y.: The large and small bumble bees that you notice in your garden and field are of different species, for bees, flies, and similar insects do not increase in size with age. When they leave the pupa case they are fully developed and do not grow afterward. There are many species of the bumble bee native of the United States, but as yet very little is known of their history or their economic value to the gardener and farmer. There is a wide and interesting field open here for some young entomologist who might acquire fame and honor by giving the world a life history of the bumble bees of North America.

Trees in Pasture.—Walter Clark, Wake Co., N. C.: Your twenty-five acres of pasture would not only be greatly improved by dotting it over with shade trees; think, besides, what a comfort it is to horses and cattle to have plenty of shady places in which to rest. It is cruel to confine animals in a field during the hot summer, and constantly exposed to the scorching rays of the sun. Planting English walnuts as you suggest—not only for shade but also for profit—is a most excellent idea but if you cannot get them of good size to start with, plant a few rapid-growing forest trees in your pasture to afford shade while the nut trees are growing, and when the latter become large enough to give the shade needed cut the former down for firewood. In addition to the English walnuts set out a few shellbarks, hickories, and pecans as they make handsome shade trees, and these nuts are always in demand and command remunerative prices.

Fowls for Small Yards.—John C. Knox, Henrico Co., Va., inquires which of the two breeds, Redcaps, or White Langshans, would be the better for him to keep in a city yard 15x25 feet in dimensions, and what number he could profitably keep in such a space. If the fowls are kept chiefly for eggs the Redcaps should be selected, but if it is desired to keep them for both eggs and table fowls the Langshans would be the better breed. In a space of so small dimensions, if care is taken to turn over the soil two or three times in a season, about eight Redcaps or six Langshans could be profitably kept.

Protecting Banks of Streams.—W. R. Smith, Jefferson Co., Ohio, writes us: Many farms are damaged by streams that flow through them. In most cases this may be obviated by the use of the so-called mattresses. Place straw alone, or brush and straw with some willow brush or twigs; begin at the upper end and work downward, placing butts down streams, mixing in some straw, and weighting with stone. Where there are no stone strong stakes and gravel will hold until the willow roots are grown. They will retain the alluvium and protect the bank. This work is first done in the spring, and repairs, if necessary, in autumn.

Paint or Whitewash for Barns.—P. B. Palmer, Ontario, Canada: There are many recipes for paints and whitewashes without oil for barns and outbuildings. In the majority of cases the basis is lime. The simpler kinds, and those most easily and cheaply made, are of course the least durable, Their cost, however, is so small, and the ease with which they may be produced in large quantities is so great that the simpler and cheaper ones are probably the most economical. First in the list comes the common whitewash, such as has been used in government work for generations. Take half a peck of quicklime, slake, and add water to make a paste. Pass through a sieve. Then add

four quarts of fine salt dissolved in boiling water. Some add to this a hot paste made of a pound of rice flour and one-fourth pound of glue, and one-fourth pound whiting in five quarts of boiling water. After standing for a week it is strained and boiled, and put on hot. The lime and salt without any of the other ingredients will make a good wash fairly durable. The salt combines with the lime and forms an insoluble compound which does not readily rub off and which stands the weather much better than a plain lime wash. It must be remembered that the lime alone has a great preserving action upon wood, and a board once whitewashed is not injured by the weather nearly as much as though it had never been protected. This protecting action goes on even when the original whitewash has entirely disappeared. It is not that there is a coat of the whitewash to keep out the weather, but the lime appears to tan the wood to a certain extent so that it is better able to resist the elements.

Cement Sidewalks.—L. Bennett, Arapahoe Co., Col.: The durability of stone blocks for sidewalks where they are made from Portland cement and sand depends very much upon the method in which the mixing is done. Sometimes fine broken stone is added to the composition, in order to reduce the cost and to give a little harder surface to resist wear. In handling Portland cement it is necessary to use only water enough to moisten the material but not to make it wet. Allowing cement to set a trifle and then working or tempering it up is fatal to its strength. Too much working, or any working after it has begun to set, appears to ruin its strength utterly, and to make it crumble by exposure to the air. When inexperienced people handle cement they commonly fall into two errors: Too much water is used, and the cement is worked after it has begun to set.

Spraying Apple Trees.—F. W. Thompson, Ogemaw Co., Mich.: When apple trees are sprayed with such poisons as Paris green and London purple, it is not safe to turn cattle in to pasture until after there has been a heavy shower or enough rain to wash the poison down into the soil. One good shower will usually be sufficient to throw the poison down beyond the reach of pasturing cattle. The apples on the trees will also be washed clean, and should any fall and be eaten by cattle there will be little danger of injury, at least not from the poisons they retain. There is some doubt in regard to the efficacy of such poisons as you name for repelling the codlin moth, and we would be pleased to have those of our readers who spray their trees this season report the results.

Prunes Dropping.—Louis Rastetter, Allen Co., Ind.: When prunes begin to drop from the trees while in an immature stage we usually suspect the curculio as the cause. But as you are positive that those on your trees are not attacked by this insect you must necessarily look elsewhere for the cause of their dropping. It may be that your trees are growing too vigorously or that the climate and location are not adapted to the varieties you are cultivating, but we are inclined to think that insects are at work on the young fruit, perhaps the plum-gouger instead of the plum curculio. Try throwing dry lime or wood ashes over the trees once or twice a week and see if this will not check the dropping of the fruit, and then examine that which falls for marks of insect enemies.

Apple-tree Aphis.—L. P. Hubbard, Fairfield Co., Conn.: The minute insects swarming on the apple-twigs you send are the *Aphis mali*, or apple-tree louse, or, as sometimes called, green-fly. The proximity of the tree to your chicken-yard had no influence in the production of these pests, and as they are sucking insects, living upon the sap of plants, spraying with London purple or similar poisons will not kill them. Beetles, grubs, and caterpillars have mandibles or jaws with which they bite and may be said to chew their food; consequently, if poisons are sprinkled over it it is taken into their bodies and causes their death. But with the sucking insects which include all kinds of bugs (*Hemiptera*) we are compelled to employ insecticides that kill through inhalation of their fumes or odors. Syringing your apple tree with strong tobacco water will kill the aphis. In greenhouses we fumigate with tobacco for the same purpose, for green flies are a pest in all conservatories and sometimes they do considerable damage to trees in gardens and orchards, especially early in the season.

Think of the Fairs.—Long before the time for the fair comes the farmer should lay his plans to make an exhibition. He should study the matter and determine to take something, if it is not more than a fine sample of his pet corn. This corn he has developed, the strain differs from all others, and now is his chance of showing that he is not only alive but a showman. Perhaps some things from the garden are worth having others look at; peppers, pumpkins, plums, parsley, pears, or the like. The thought of losing the prize should not be uppermost. Help to make the fair large and valuable. Take an interest, and the day spent at the fair will be one of profit because you are a part of it. Get something ready for the fair and be sure to take it. If you cannot beat your neighbor, strive to beat your own record of last year. That will mean progress, and success is the twin sister of progress.

The New York State Flower.—The result of the vote of the school children last Arbor Day for the election of the State flower has been announced by the Superintendent of Public Instruction. 294,816 votes were given for the rose, and 206,402 for the golden rod, making the majority for the rose 88,414, thus establishing the rose as the State flower of New York.

Leaves for a Name.—L. A. S., Bremen, Ind.: The shrub with these lobed-leaves and small whitish flowers on a slender peduncle is the maple-leaved viburnum (*Viburnum acerifolium*). The fruit is red when first ripe but becomes black with age as you describe it. The single leaf you send is probably some species of poplar but seems to be rather an odd form. Send us a leaf attached to a twig in order that we may have an entire leaf and a bud to aid us in determining the species. The fertile catkins of some of the poplars are quite long and you may have referred to them as racemes of flowers.

Temperance Nut.—B. Snyder, Erie Co., Pa.: The so-called "temperance nut" is no other than the long known cola or goora nut of west tropical Africa. The tree producing these nuts is the *Cola acuminata* which attains a height of thirty to forty feet in its native country, also in the West Indies, where it was introduced many years ago. These nuts are held in high estimation among the negroes, by whom they are used to give strength, allay thirst, promote digestion, and stay hunger, and are supposed to possess the same properties as the coca leaf of tropical America. Recent investigations and analysis of this nut in England show that the active principle is the same as that found in coffee, viz., caffeine; consequently, it is assumed that an invigorating temperance drink might be made from these nuts, hence, the new name. It has also been highly recommended as a remedy for sea-sickness.

Sorrel.—(*Rumex Acetosella*) J. B. Bratney, Randolph Co., Ill., sends a weed stating that it is new in his vicinity and that they fear it is a bad weed. The plant in question is the sheep sorrel, a troublesome weed, at first introduced from Europe. It has now extended pretty well all over the country and may even be found along the railroads in Kansas, Colorado, Wyoming, and Montana, and also on the Pacific slope. Thorough and persistent cultivation is the only way to eradicate this pest.

The Farmer and the Railroad.—President T. B. Blackstone, of the Chicago & Alton railroad, writes to the AMERICAN AGRICULTURIST: "In my opinion it is wrong to assume, as many persons have done, that farmers are the enemies of Western railroads. Railroad transportation is as necessary for farmers as it is for all other classes of persons. Persons seek by all means which they believe honorable to secure such transportation at the lowest possible cost to themselves. By reason of their numbers they may exert more political influence than some others, but I fail to see that they are actuated by motives different from other classes of railroad patrons. All seek the same object in one way or another." This is a fair statement of the case in a nutshell. The people who complain about the "granger" attacks on the railroads like to get their freight and passenger transportation as cheap as possible. But if these people happen to own railroad stocks or bonds, especially if the investment represents more or less "water," they think it dreadful that the farmers should combine to secure the same reduction they would insist upon if they could. As a matter of fact, the farmer is simply trying to get the same rights, privileges and favors that other business interests secure. In carrying out this idea the farmers may be headstrong and not always business-like; but this is not surprising. With more experience they will learn the more clever ways by which business men manipulate finances and get rates down where they want them.

Phil M. Springer.—With the death of Phil M. Springer the live stock interests of our country, and especially the American Berkshire Association, lose one of their most esteemed and able coworkers in their field of labor. As secretary of several associations, he made hosts of friends through his earnest and faithful devotion to duty, and never-failing fidelity to the important trusts imposed upon him. His brother, John G. Springer, who has served as his assistant during several years, succeeds him as secretary of the association.

American Nurserymen.—At the annual session of the American Association of Nurserymen, presided over by S. M. Emery, of Lake City, Minn., and held at Minneapolis, was attended by fully 250 members, and proved profitable to all present. The report of the secretary showed receipts during the year of $1,753.71, and disbursements of $1,273.79. Including the previous balance on hand, there is now about $1000 in the treasury. Among other business attended to was the drawing up of a resolution to the directors of the World's Columbian Exposition, in which it is stated that the classification adopted for the Horticultural subjects of that Exposition is faulty and unjust to the horticulturists of the country, and if allowed to stand will tend to hinder the success of that department of the Exposition. This classification is earnestly protested against, and it is urged that it should be changed in accordance with the acknowledged, reasonable classification accepted by the horticulturists of the world. The officers elected for the ensuing year are: President, J. Van Lindley, Pomona, N. C.; vice-president, W. J. Peters, Troy, O.; secretary, Charles A. Green, Rochester, N. Y.; treasurer, A. R. Whitney, Franklin Grove, Ill.; executive committee, W. C. Barry, W. J. Heikes, G. J. Carpenter. Atlanta, Ga., was selected as the place for the next annual session.

New York State Fair.—The premium list just issued by The New York State Agricultural Society, for the Fifty-First Annual State Fair, presents several new features which show valuable and important changes in the prizes offered, the rules governing the management of the fair, etc. A "sweepstakes" of fifty dollars for the best Shorthorn bull of any age, a similar one for the best Shorthorn cow of any age, and like offers for each breed of cattle, horses, sheep, and swine, is an important improvement. Besides this, over three hundred new prizes have been added to the list, largely in the domestic department, and in all other departments third prizes have been added. Another change for which exhibitors in large classes will be grateful is the "award of merit," which consists of a certificate issued by the society, showing the total number of animals exhibited in competition in each class and age and the comparative merit of each of the best five. The location of the grounds, with the splendid railroad accommodations, the New York Central, West Shore, and Delaware Lackawanna railroads having depots on the grounds and the freight tracks extending into the grounds for the benefit of exhibitors will all tend to make the fair a success. Every effort is put forth to make the fair a grand "Agricultural and Mechanical" exhibition of unusual value and interest.

Iron Ore.—B. G. Stauffer, Dauphin Co., Pa.: The thin scales mixed with quartz rock are iron, and is a variety known as micaceous oxide of iron, or specular iron ore. It is found in the primitive and sometimes in quite extensive beds, but usually in connection or in the neighborhood of other and more valuable varieties of iron ore. An assay of such small samples as you have sent us would be of no value to you because it might not represent the percentage of iron of other specimens gathered within a few feet. Take samples to some practical smelter of iron ores and get his opinion of the value of the deposit, for much will depend upon its location and extent.

AMERICAN AGRICULTURIST
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AUGUST, 1891.

The Farmer as a Citizen.

The mental life of the American farmer was never more active. He is a reader and thinker to-day more than ever in his existence. Intellectual lethargy is no longer his characteristic. Yet the campaign of education has only begun. It is destined to assume proportions of great magnitude. Why? Because it is a movement among the farmers to help themselves—quite a different thing from forcing education upon them.

The Chautauqua plan and the proposed University Extension will immensely stimulate and assist the efforts farmers are now making through their various orders and through the proposed Farmers' Educational Association. So long as this work is kept in the farmer's hands and under his control—at his expense and therefore self-supporting—it will continue to grow.

It is but natural that political and financial questions should largely occupy the farmer's mind at this time. We are just emerging from a period of great agricultural depression, during which specially favored interests have prospered even more than when farmers were making money. As the farmer has grown poorer the few have certainly grown richer. The power of accumulated wealth, of legalized monopoly, and of political corruption, is stronger to-day than ever, and this is saying a good deal. Those who are included in these classes have been exceedingly disturbed at the progress of the farmers' movement. Their skillfully-devised protest, united with instances of hasty and ill-advised action on the part of farmers in a few States, did much to cause the great body of conservative citizens in various occupations to also regard the farmers' movement with doubt if not with terror.

But all this is wearing away. The great public, through the medium of the daily and weekly press and the reviews, is beginning to understand what the farmer desires—equality before the law. The farmers, as well as the general public, are also beginning to estimate at their true value the extravagant ideas advanced by a few wild demagogues. The efforts of such men to blind the farmers' eyes and restrict their education on current topics to only side of the case, are meeting with the failure characteristic of all such attempts in a free country. The farmer is thinking for himself as well as acting for himself. He may be misled, hoodwinked, or bulldozed for a time, but, as one of our contributors well says, the farmer is determined to go to the root of these matters.

It is just this determination that makes the present movement a campaign of education far beyond the limits originally laid down by certain members of the Farmers' Alliance. The people will accept the dogma of no one man or set of men. The farmer is too independent to permit himself to be seriously led astray. He is too patriotic a citizen to do anything that he thinks will seriously impair the welfare of the Nation.

Yet the farmer is sufficiently independent to insist upon reforms that shall equalize somewhat the advantages our people enjoy, although such reforms must necessarily be at the expense of hitherto favored classes or individuals. His great work now is to investigate and decide just what reforms are most needed. Then he has to find out how to effect them and how to secure the support of a sufficient majority of his fellows in all occupations to compel respect for these demands.

All this involves public agitation and necessitates a scrutiny that must expose the weak points and reveal the strong hold of all proposed reforms. That the farmer is leading in this policy instead of being led means a gradual but none the less profound change in the administration of government. That this change must be for the best, as it was a hundred years ago, when the farmers of Lexington and Concord rose in their might, there can be no question. The precise form these influences will take it is now impossible to determine. It is probable that the presidential campaign of 1892 will be a more exciting educator than any in our country's history. That event, however, will probably be the beginning of the change rather than a great victory for any one of the half-dozen parties or influences that are now striving for the mastery.

As the months go by, and a prosperous harvest is upon us, the AMERICAN AGRICULTURIST repeats its assurances uttered nearly a year ago to the effect that the present movement is destined to make the farmer a better citizen, or rather a more active citizen.

The Colleges and Better Roads.

The movement toward better roads in this country is rapidly taking definite form. One of the best suggestions is that made by President Andrew D. White, of Cornell University. It was on the motion of Mr. White that the trustees of Cornell University, at their meeting in June, adopted the following declaration and resolutions:

WHEREAS, The Governors of this and neighboring States, as well as various public organizations, have called attention to the faulty construction and wretched maintenance of the road system of these States; and

WHEREAS, This condition of things is exceedingly injurious to the commercial, manufacturing, and especially to the agricultural interests of the country; and

WHEREAS, The Cornell University recognizes its duty under its charter to promote these interests by research, experiment, and instruction,

Resolved, That the Professor of Civil Engineering, the Professor of Agriculture, and the Professor of Horticulture in the University be and are hereby constituted a committee to prepare a plan (to be laid before the Executive Committee at the earliest convenient day) for gradually bringing the roads on the University property in Ithaca into thoroughly good condition, using such materials as shall be most suitable and economical, preferably those obtained in the neighborhood of the University, the whole plan to be conducted with strictest regard to economy of construction while securing thoroughness and permanence. And that said committee also present careful estimates of the cost of various methods of thus reconstructing and improving the different lines of communication on the University property.

Resolved, That in the opinion of this Board it will be advisable to construct the various roads not all upon exactly the same plan, but in accordance with such different systems as may have already been proved economical and permanent elsewhere, and to keep careful account of the cost of construction and maintenance of each.

Resolved, That when any road shall have been constructed as above there shall be placed near it, at some point within public view, for the information of the public, an inscription giving the cost per mile of such road, and that at a later period there shall be added to this a statement of the average cost of maintenance per mile per year.

Here is a simple, practical way in which our agricultural and mechanical colleges may greatly aid and give direction to the current endeavor for better roads. It will be seen that the plan is a thoroughly practical and simple one, financially considered. As an object lesson, also, it will prove enormously useful. Wherever a small stretch of thoroughly durable and model highway has been constructed, under honest management, the people for miles have become advocates of a better system of road building and management. This is one of the most important works for our agricultural colleges to undertake.

The AMERICAN AGRICULTURIST regards these colleges as possessing a far greater power for the good of agriculture than has yet been apparent. We would have them not only a center of learning but also a center of aggressive influence in behalf of better methods, not only in the scientific part of farming but in the executive work of the agricultural industry. The education they give should equip men to act—to lead in public matters. There is a great tendency among farmers to find fault, but it is difficult to get them to unite in an effective attempt to remove the cause of complaint. Just now the spirit of organization is abroad, but the actual work of the farmers' orders is too commonly confined to agitation of glittering generalities. With such scattered forces, the farmers find it hard to unite right at home in securing better government, or improved roads, or co-operative buying and selling.

Our agricultural colleges ought to make themselves centers of power in the right direction in all such matters. Their graduates should be well instructed in this respect. Give these young men the right kind of a start and they must develop into leaders—not only in thought but in action. It is true that the college cannot furnish brains to students, but proper training may wonderfully develop any young man's natural abilities as much in affairs of government as in other respects.

A Word to Artists.

One of the greatest improvements in the AMERICAN AGRICULTURIST of late has been the increase in the quality and quantity of its illustrations. The present number is particularly rich in its art department.

We are by no means satisfied with this progress, substantial though it is. While we desire to obtain the best work of professional artists, the AGRICULTURIST is also ambitious to stimulate and develop the artistic tastes of its readers and to bring out the art talent among them that is now latent, or rather unappreciated, because unknown.

The would-be artist, particularly the young man or woman whose talent for drawing is now promising but perhaps undeveloped, as well as the professional art world, will await with interest our plan, which will be announced in the AMERICAN AGRICULTURIST for September.

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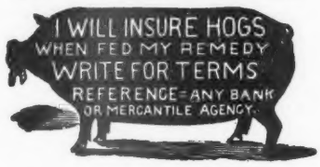

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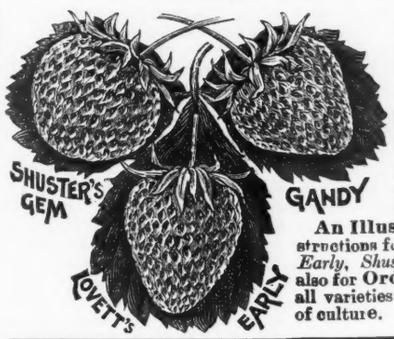

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ISSUES OF THE DAY.

The Kansas Idea.

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This farmers' movement is the outgrowth of the unjust burdens borne by the farmers. These are high taxes, extortionate transportation rates, usurious interest and the manipulation of finance and of the markets in the interest of the owners of gold. The contraction of the currency—refunding, resumption, and demonetization of silver — was accomplished without consulting the sovereign people, who did not even know what was going on.

The adoption of the gold standard is based upon antiquated customs, heathenish superstitions, and traditions derived from despotic governments. Statistics show that the amount of gold mined during the last five hundred years is not enough to pay five per cent of the present indebtedness—National, State, municipal, individual, and corporate—of all nations. To make these debts payable in gold, and to measure all labor and property by the same standard, is as baseless as to compel the farmers of Kansas to measure all their grain in one thousand half-barrel measures, constructed of a scarcely-obtainable material like gold.

The intimate connection between finance and the agricultural and business depression all students of affairs admit. At the close of 1865 prosperity was general throughout the country. People were mostly out of debt, and money was plenty, being about fifty-two dollars per capita. This was just after a most expensive and destructive war. Now, after twenty-five years of peace and prosperity, after an age of progress and invention, and of unprecedented production, one has only to read the census of real estate mortgages to appreciate the straightened conditions of our people. In Kansas alone the railroad, municipal, State, and real estate mortgage indebtedness, exclusive of unrecorded indebtedness, exceeds the total assessed valuation by one hundred millions of dollars.

Thirty years ago farmers owned seventy per cent of the wealth of the Nation; to-day they barely own twenty-seven per cent, although the number engaged in agriculture has more than doubled, also the acreage and number of farms, while production is nearly trebled. A mortgage is now the rule; then it was the exception.

What is the cause and remedy? Not extravagance, indolence, shiftless farming, laziness, or lack of business ability. The farmer has worked as hard as of yore, besides having the aid of inventions, and living more economically than any other class. Neither is overproduction the cause, for it would only require each of our people to eat a few more pounds of produce to consume all that we now export.

In this dilemma farmers are organizing as by magic. They demand, first, the abolition of national banks as banks of issue. A law that gives a set of men possessed of $50,000 a privilege that is denied to less fortunate citizens is class legislation in favor of the rich at the expense of the poor. To pay interest on bonds deposited as security for note circulation is an outrage. The farmer who gives a mortgage to secure a note might as well ask the holder for interest, instead of paying it, as the banker to ask interest of government on its security loaned to the government to secure his circulating notes.

The most opposition is against the farmers' second demand for sub-treasuries, where his imperishable produce may be stored and advances made upon it, or for land loans, or both, to an extent that shall increase the circulation to fifty dollars per capita. In this the farmers simply ask for a restoration of the conditions under which they were practically out of debt, and prosperity reigned everywhere. Their demands are styled impracticable, chimerical, unconstitutional, and class legislation. But these demands will prevail unless their opponents convince us to the contrary by conclusive, sound, and reasonable argument.

The Constitution gives Congress power to lay and collect taxes. Since labor produces all, interest for the use of money must be a tax, and we hold that only the government instituted by ourselves has the right to tax us. Government loans, therefore, would simply divert this species of taxation by non-producing private capital upon labor into its rightful channel. Again, is it more to the general welfare for the government to aid railroads and steamships, erect public buildings, aid exhibitions, etc., than it is to save the homes of the people?

If Congress has power to regulate commerce it has power to increase the medium of exchange, without which no commerce can exist. Who can deny that our commerce must be increased largely by an increase of the currency? Since Congress has the power also to coin money and regulate its value, why has it not the right to create a note inscribed about as follows: "This note is secured by a real estate first mortgage on property double the face of the mortgage," or "is secured by a warehouse certificate of imperishable produce worth twenty-five per cent more than its face." Why would not such notes be equal to silver, gold, or greenbacks? Is a non-essential luxury like gold to be preferred to the very foundation of human existence?

Money based on land must be more safe, stable, patriotic, and just than other. It will not fluctuate, because the supply of land will not increase or decrease like gold. It will not depreciate, for as long as humanity increases the value of land and its products will increase. It will not hide in time of danger, and will never be hoarded or exported.

The alleged dangers from inflation are all bosh. Our wealth-producers neither suffered nor complained when the circulation was fifty-two dollars per capita. They never asked Congress for contraction. Millions ask for an increase now, and, as sovereign people, ought to and will have it.

Nor is the farmers' demand class legislation. It would not benefit one class at the expense of the other. What class of producers would suffer by such an increase? Besides, are not our statute books already burdened with class legislation?

Improved Prices Not a Sufficient Remedy.

W. H. SMITH, DAKOTA CO., MINN.

Mr. C. Wood Davis writes of the future prospects of agriculture in the May and again in the July numbers of the AMERICAN AGRICULTURIST. His treatment of the subject is very like that of the party politicians, and amounts simply to this: Things will come out all right—just attend to your farms and let us alone. It appears from his second article that he is a statistician and that his statistics and those of the United States Department of Agriculture do not agree. And now he is trying to convince us that he is right and the other man wrong.

To the intelligent farmer the most notable feature of his second article is in his omissions. He utterly ignores the fact that in much of the wheat-producing area of the world the market price of wheat has been either below or so very little above the cost of production that the better class of farmers have turned their attention to other products, and so consumption has overtaken production. This is well illustrated in England where, according to the writer, the area is less by 600,000 acres than formerly. An English exchange said not long since that farmers were encouraged with the prospect that wheat would reach a price at which it could again be grown profitably. The same is true in America. And the farmers are already considering the matter and preparing to increase the acreage.

In the former article Mr. Davis says: "When from any cause the purchasing power of two-fifths of the people has been destroyed it means lessened employment for others and lower wages. * * * This state of affairs * * * is not due (1) to too much or too little currency; (2) too much or too little protection; too much or too little free trade; (3) or to the unreasonable exactions of the great transportation lines or yet to the baleful and far-reaching practices of the board of trade gambler in farm products, although the cases named may and in some cases certainly have been auxiliary."

(1) The report of the United States Secretary of the Treasury, November 1, 1889, shows money in circulation amounting to $1,387,351,825, and deposits in national banks of $1,950,935,161. Assuming deposits in state and private banks to be as much more we have in round numbers four billions of money. Of this amount one-fourth must be held as a reserve fund to secure depositors, so that we have less than four hundred millions, or about seven dollars per capita actually available, as circulating medium. This does not take into account whatever amount may be in the United States Treasury, which would reduce it to almost nothing at times supposing the banks to comply with the law. Does Mr. Davis think that this condition plays no important part in the prosperity of the country? Why, last fall, Minneapolis millers and grain dealers went to Europe to borrow money to handle the crop with, not because of lack of capital but from lack of available money. The millers and grain dealers at one time proposed to issue their own scrip in payment for wheat, but the wholesale merchants refused to accept it, and so that scheme failed. If wheat were worth twice as much, would the same amount of circulating medium handle it any better? The most serious effect of a shortage of money comes from its lowering the price of farm products and the price of factory labor, while it does not correspondingly lower the price of what the farmer has to buy or of the taxes and interest he has to pay.

(2) The tenth census of the United States shows that of the $5,369,579,191 total value of the manufactures of the country, $1,024,801,344 were profits to the manufacturers.

(3) We find from the same authority that the railroad transportation earnings of the country, less transportation expenses, were $228,650,474. We have no data for estimating the effect in dollars of the gambling in farm products. It is unquestionably a factor of no little importance. It is certain that whatever profits the gambler gets out of it ultimately comes from the producer or the consumer, because there is nowhere else it can come from.

Now we have loans and discounts of three billions at say seven per cent interest, amounting to $210,000,000 a year; profit on manufactures of the country, $1,024,801,847; net transportation earnings of railroads, $228,650,474. Add to this interest on mortgages $250,000,000, and interest on public indebtedness $147,000,000, and we have $1,860,452,321. It is safe to say that other items might be produced, such as telegraph, express and insurance that would bring the amount up to two billions or more. This amount is all tribute to capital and profits on capital (accumulated, concentrated, crystalized, stored labor). And this amount is constantly increasing faster than the population, faster than the wealth of the country.

Mr. Davis would have us think that a matter of a hundred million dollars on the price of the annual crop of wheat would turn the scale and make not only the producers of the wheat, but everybody else, prosperous and happy. You can't fool the farmers that way. The farmers are reading and thinking and discussing, and they are going to the bottom of these things.

Many Insect Pests.—Francis Dickinson, Middlesex Co., Mass.: The insect pests to which you refer will probably all have disappeared by the time this note appears in print. The "snails" you find eating the leaves of your pear trees are the larvæ of a saw-fly and are readily killed by dusting the trees with lime or fine wood ashes. The rose-beetles have disappeared for this season and may not appear in such vast numbers next but, if you fear they will, write us as a reminder next March for means to protect your grapevines. The ants visiting your fruit trees do no harm to the trees but go there to feed upon the sweet fluids secured by the small green flies or aphides, the latter living upon the sap of the trees, which they obtain by puncturing the leaves and soft, succulent twigs. The aphides may be killed with strong tobacco water.

Radish Worms, etc.—Frank M. Potts, Middlesex Co., Mass.: Without having a specimen of the worms infesting the radishes we are not able to determine the species. It is probable, however, that liberal applications of soot, wood ashes, or caustic lime to the beds at the time of sowing the seed will keep out the worms. Our opinion in regard to the value of the fruits you name is: Russian mulberry not worth cultivating for its fruit. The Abundance plum promises well. Japanese wineberry is worth cultivating as a curiosity and for ornament, but so far the fruit has not been marketed. Tree currants make very neat ornamental shrubs, but plants on their own roots are preferable for the fruit garden. There are some excellent varieties of the June berry of both the tree and bush forms, but where birds are plentiful they usually take more than their share of this fruit. We have cultivated this fruit and a number of varieties for the past quarter of a century but have as yet got no fruit for the table.

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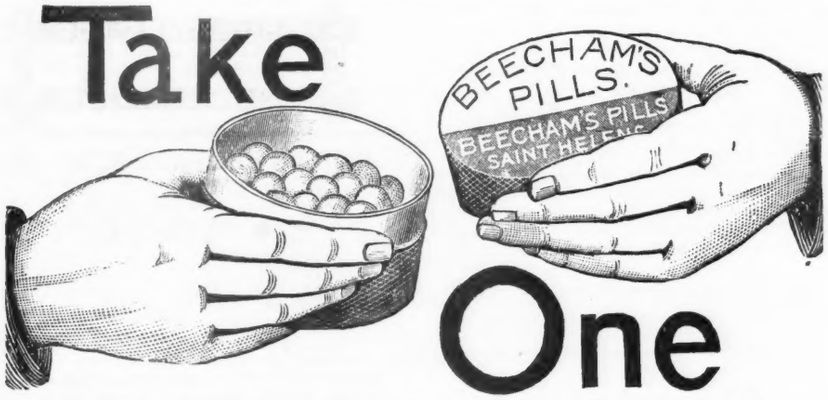

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This superb large octavo volume will be hailed with delight by thousands of individuals throughout the country. It covers a great deal of ground. In fact those having but a small garden plat attached to their dwelling may here learn the most advantageous method of planting it, while the superintendent of a large city park, or of cemetery or railroad grounds, will find his special requirements treated also. The treatment of lawns and sloping grounds with effects produced by different trees and shrubs upon them at all times of the year, and the planting of these in order to best get the different seasonable effects, is ably treated. Then the subject of garden flowers and bedding plants, the ornamentation of ponds and lakes, and the formation of cozy nookeries on the home grounds receive attention. The chapters on lawn planting for small places, city parks, railroad, churchyard, and cemetery lawn-planting are very strong and suggestive. The work is embellished with many beautiful illustrations of park and garden scenery besides having a great number of pictures of flowering shrubs and herbaceous plants. Few men are better fitted for a task of this kind than Mr. Parsons, who has traveled extensively, and made a special study of the subject under varying conditions and from all aspects. His successful management of Central Park, New York City, alone witnesses his remarkable artistic judgment and practical skill. Sold by the Orange Judd Co. Price $3.50.

THE CAULIFLOWER. By A. A. Crozier; cloth, pp. 230. Register Pub. Co., Ann Arbor, Mich.

In this handy volume one will find almost everything about the cauliflower, from the seed up to the final process of cooking the delicious head. The author has spared no pains to get at the cream of the subject. Having grown many acres of this vegetable for years in the market garden, and with marked success, he is certainly well qualified to prepare this work, which will prove useful to the farmer, market gardener, and private kitchen gardener alike. The status of the cauliflower-growing industry in Europe and the United States and the importation of the vegetable are treated after a short chapter on the Origin and History. Then comes the Management of the Crop, a most excellent chapter, wherein the subjects of soil, fertilizers, planting, cultivating, harvesting, keeping, and marketing are fully set forth. Following this are chapters on The Early Crop, Cauliflower Regions of the United States, Insect and Fungus Enemies, Seed, Varieties. After these is a good chapter on Broccoli, describing the differences between it and cauliflower, its cultivation, use, and varieties. Finally, in the chapter entitled Cooking Cauliflower, digestibility, nutritive value, chemical composition, and tempting recipes are given. Sold by the Orange Judd Co.; price $1.50.

INSECTS AND INSECTICIDES. A Practical Manual concerning Noxious Insects and the Methods of Preventing their Injuries. By Clarence M. Weed, D. Sc., Prof. of Entomology and Zoology, New Hampshire College of Agriculture and Mechanic Arts, etc., etc. Cloth, pp. 281, with many illustrations. Published by the author.

This work will be heartily welcomed by all intelligent farmers and gardeners. It has been prepared with the idea of furnishing the farmer, the fruit-grower, the florist, and the housekeeper with a short account of the injurious insects with which they have to contend, and the latest and best remedies for them. It is the only book published in America which covers the whole field; is profusely illustrated and handsomely bound in cloth with embossed cover. In the introduction there is a short discussion of the Transformations of Insects; Natural Enemies of Injurious Insects; the Principal Insecticides; Methods of applying Insecticides, with special reference to Spraying; and Directions for Collecting and Preserving Insects. Sold by the Orange Judd Co.; price $1.25.

WESTERN NEW YORK HORTICULTURAL SOCIETY: Proceedings of the Thirty-sixth Annual meeting; paper, pp. 154.

Containing valuable papers on different crops in the western counties, together with accounts of methods of keeping down insect and fungus pests and other subjects incident to horticulture. Address John Hall, Secretary and Treasurer, 406 Wilder Building, Rochester.

NEW JERSEY STATE HORTICULTURAL SOCIETY; Proceedings of the Sixteenth Annual Meeting; paper, pp. 196.

Contains addresses and reports on various horticultural subjects by the leading horticulturists and scientists of the State, and also numerous answers to questions and useful discussions. Address Wm. R. Ward, Secretary, Newark, N. J.

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I am very respectfully,
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GRANGEVILLE, IDAHO, June 16, 1890.
Dear Sirs:—The set of $5.50 harness that I ordered for Chas. Bentz, of this place, came O. K., and *every one here* WERE MUCH SURPRISED, AS THEY ARE AS GOOD AS HARNESS SOLD HERE FOR $20. Enclosed please find $10 for which please send your No. 6, $10 harness (nickel trimmed), by express to Frank Vansice.
Yours truly,
E. BECK, Postmaster.

MANCHESTER DEPOT, VT., June 30, 1890.
Gents:—The top buggy and road cart are at hand all O. K. They are VERY SATISFACTORY, and in every way appear fully equal to your representations. I think you may, in due time expect other customers from this locality, *as the goods are liked* BY ALL *who have seen them.* Yours very truly,
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MATTERS OF BUSINESS.

[*Continued from Page* 472.]

Board of Directors of the American Southdown Association, at its recent meeting in Springfield, Ill., passed the resolution that from and after that date the same fees and conditions prescribed for American-bred animals govern the admission of Southdown sheep bred in Great Britain or Ireland, viz.: That the immediate sires and dams of animals bred and owned in or imported from Great Britain and Ireland must be recorded, and that said animals must trace in all their crosses to the flocks of reputable breeders in Great Britain and Ireland, or to ancestors of animals previously recorded, and that fees and conditions for registry shall be the same as for American-bred animals. By this modification of the rules the five-dollar registry fee on imported animals is removed, and all animals eligible for registry are placed on an equal footing.

Commencement—Hellmuth College—London, Canada.—The twenty-second annual exercises of this well-known College for young women and girls, held on the 17th of June, were a complete success. The proceedings consisted of an excellent programme of music and recitations, addresses by the Dean of Huron, and the Principal, Rev. E. N. English, and the awarding of the Diplomas and Honors by the Dean. The exhibition of art work in the studios was very fine, consisting of painting in oil and water color, pastel, etching, crayon, china decoration, wood carving, modeling, etc. The College roll includes students from all parts of America. The next term begins Sept. 9th.

A New Thing in Fencing.—A new kind of fence post has lately come to our notice which is of very ingenious construction and bids fair to be extensively used for farm and general fencing. The Anchor Post, as it is named, is manufactured by the Anchor Post Co., of New York city, who controls the patents. It is made of malleable iron and is adapted to carry any kind of wire. The posts are made firm in the ground without the necessity of digging holes. In the base of the posts are two apertures, through which strong, iron blades are driven diagonally into the ground, the heads of the blades being so arranged that when driven home they grip firmly to the side of the post and to each other. The post when thus erected is held not only by its own base, which is in the ground to the depth of a foot and a half, but also by the two interlocking blades or braces so that it is next to impossible to overturn one of these posts.

Ericsson's Most Useful Invention.—The Improved Ericsson Hot-air Pumping Engine, made solely by the De Lamater Iron Works, of New York City, is one of the best for pumping water to the upper floors of houses in cities or in suburban residences. The water may be taken from almost any source on the premises—from spring, well, cistern, or brook. By the use of this engine, too, the garden can be irrigated and kept in thrifty condition in the dryest season and in the most exposed places, the stock can be watered from deep wells, and the lawn be kept fresh and green. The value of this pump in cases of fire away from the reach of fire departments has already proved to be very great. This company also manufactures the celebrated Improved Rider Compression (hot-air) Pumping Engine, for domestic water supply and deep well pumping. Parties desiring additional information are referred to the Firm's advertisement on another page of this number.

Excellence in Grain Drills.—The Superior Drill Co., Springfield, Ohio, has an advertisement in our columns which deserves attention. The Superior Drill is now made with steel frame, thus greatly increasing its durability. The Double Force Feed Distributer on this Drill with two channels, one for large and one for small grain, either to be used as desired, enables the farmer to sow his grain with certainty and accuracy, exactly in the quantity desired. The Marks Feed Fertilizer Distributer on the Fertilizer Drill will sow the most pastey and refractory posphates with absolute certainty. Each Superior Drill is provided with an accurate land measure, and an Improved Double-Tree Hitch which relieves the horses of all unnecessary strain. The makers claim it is the lightest draft drill on the market. This company also manufactures corn cultivators, improved cider mills, hay-carrier, and equipments. Printed matter fully describing these goods can be procured by applying to the company as above.

An English Duke's Opinion.—In his very interesting and instructive article on American railways published in the April number of the *Fortnightly Review*, the Duke of Marlborough places the New York Central at the head of the great railway corporations of the United States. Its central location through an almost continuous city from New York to Buffalo and Niagara Falls; its wonderful capacity for handling an immense traffic; its splendid passenger service, with eleven daily trains between New York and Buffalo and Niagara Falls, eight between New York and Chicago, three between New York and St. Louis, three between New York and Cincinnati; reaching by its own rails and through its connections every important commercial center in the country; its beautiful scenery, comprising as it does every variety of landscape; its entrance into the very heart of the metropolis of the country; these advantages, in connection with the number and variety of health and pleasure resorts which it reaches by its unequaled through-car service, combine to impress the opinion upon all who investigate the subject, as the Duke of Marlborough did on his recent extended tour of the United States, that the New York Central is to-day "America's greatest railroad."—*Troy Budget.*

ANIMAL AILMENTS.

Sow Lost Six Teats.—J. A. Boughart, Morris Co., N. J., wishes to know what to do with a sow that has lost six teats that has four fat and six poor miserable pigs. Take away the six pigs and feed them cow's milk and wheat middlings. Feed the sow liberally, and when the four fat pigs are six weeks old wean them and fatten the sow for pork.

Diarrhœa of Mare.—A. Jacobs, Sioux Co., Nebraska, has a valuable young mare which has diarrhœa every few weeks with colicky symptoms. Feed ground feed dry. Oats and wheat middlings equal parts; no grass, but clean, bright hay. Give a handful of powdered gentian in the night feed, and never give more than half a pail of water at a time. Water four or five times a day.

Corn Colic.—A. Stephens, Champaign Co., Ill., has a young mare that had been turned out to grass for a week. She was then taken up and fed seven ears of hard corn (which she did not half masticate, probably) and put to violent work, when she stiffened and drew up in the flank. This is a case of corn colic from indigestion. Feed ground oats and wheat bran. Corn is too heating.

Corns on Horses' Feet.—Henry Warner, Providence Co., R. I., asks for our opinion of the claim made that by growing the hoof corns can be grown out. A corn is not a foreign substance like a thorn in the flesh, but an induration of tissue caused by undue and long continued pressure. Remove the pressure and the corn will take care of itself. But to relieve the irritation and pain corns are cut out so as to give prompt relief.

Occluded Teat.—L. Eggleston, Fayette Co., O., has a valuable Jersey cow that has a partially closed teat from a scratch or cut. This must be dilated by a smooth tapering piece of hard wood well oiled with olive oil before each milking. The point should be small, but not sharp. A little practice will perfect the mode of manipulation. Feed the cow one quart of corn meal and one quart of wheat midlings, on which scalding water is poured half an hour before feeding, night and morning.

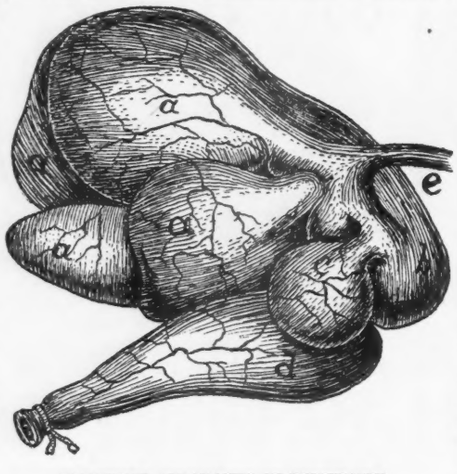
Sick Cat.—Mrs. C. T., Long Island, has an intelligent cat that she has long been attached to. The animal is sick, throwing up her food of any kind. She has suffered in a similar way once before. You need not apologize for showing your genuine humanity toward an affectionate pet cat. Judging from your letter we presume that your cat has eaten leaves or plants having been sprinkled with Paris green. The symptoms are those of poisoning. Give, if the difficulty again occurs, white of eggs beaten in new milk, then a teaspoonful of castor oil and ten drops of paregoric. Keep from food or drink, except as advised, for two days.

Sinus of Udder.—M. E. Darby, Perry Co., Ia.: The best thing you can do with the cow having the sinus in the spoiled quarter of udder is to fatten her for beef. The calf running with the cow will keep up the discharge. Wash the sore with chloride of lime water, a tablespoonful to a quart of water. If the cow is specially good, a veterinarian may lay open the sinus and thus cure the discharge. The cow giving bloody milk should have a handful of flaxseed in a quart of bran, on which two quarts of hot water is poured half an hour before feeding night and morning, and the udder sponged with hot water before each milking.

Nasal Gleet.—J. W. Russell, Alachua Co., Fla., has a fine fat mule that has a chronic discharge from one nostril, and the corresponding eye has a watery or mattery discharge. It probably originated from cold, standing in a draught while hot and sweaty. A tablespoonful of chloride of lime in a quart of water thrown into the nostril night and morning will remove the offensive smell and lessen the discharge. A blister back of the ear may be necessary. Give tar water to relieve the breathing. The eye should be daily bathed with warm water in which a few grains of sugar of lead is dissolved to the quart of water. Care must be taken to avoid any discharge from animals, lest the human eye should be infected. This case should be carefully diagnosed lest glanders or farcy might exist. For this purpose we advise the calling of an experienced veterinarian, as glanders is contagious and fatal and requires careful handling lest the groom become diseased.

Poor Mare After Foaling.—Samuel Green, N. W. T., has a young mare that lost her foal after natural birth and is thin, poor and feeble. Feed the mare ground oats, wheat middlings and linseed meal. One part oats, two wheat middlings and one of linseed meal. Or give a handful of whole flaxseed instead of the meal. The old mare that has failed to breed for seven years will never breed. There are thousands of people who have very valuable mares that they would like just such other good horses from but they wait until the mares are old and worn out and then find it too late to secure such superior horses. Mares that prove extra good animals should be bred early and often. Extraordinarily good horses are too few. Breed only from the best at early maturity and you will not be disappointed.

Digestion of Ruminants.—Mr. Joseph Wright, Silver Bow Co., Montana, desires to know the place in the inwards of a cow where lodgment of undigested food accumulates. The stomachs of the cow are shown in the accompanying engraving: *A* illustrates the rumen, or first compartment; *b*, the reticulum, or second compartment; *c*, the omasum, or third compartment; *d*, the abomasum, or fourth compartment, or true stomach; *e*, the œsophagus, or gullet. The food, which requires much mastication, after this process is partially performed passes into the first or large stomach, and only a portion into the second; but if it be ground and wet, meals or bran, it goes into



DIGESTIVE APPARATUS OF RUMINANTS.

all of them, but mostly into the fourth or true stomach, which corresponds with the human stomach. This part of the digestive apparatus of the milk-fed calf is the principal organ of digestion, the milk going directly into it. When the coarser foods which had passed into the first and second stomachs has become sufficiently macerated and dissolved, it is thrown by the contraction of these two stomachs, assisted by the abdominal muscles and diaphragm into the canal leading to the gullet, where it receives the molding into a cud or pellet, then by its contraction it passes into the mouth for a second mastication and insalivation, when it is again swallowed and most of it passes into the third stomach, except the more fluid part which with all fluids drank pass to the fourth or true stomach. That portion of ruminated aliment that reaches the third stomach, after further maceration, passes to the fourth where true ventricular—kneading—agitating—digestion is completed.

Gad Fly—Bot Fly.—Arthur S. Henning, Kendall Co., Ill., asks: "What bug or fly is it that lays those small yellow eggs on horses? How may I prevent the eggs being laid, and how rid the horses of them afterward?" This is the gad fly; there is no way to prevent their laying their eggs on horses at pasture. They can be burned off by lightly and quickly passing a hot iron over the eggs. They do no harm, and well groomed stable horses have but few or none. The bot eggs after a few days hatch, and the worms drop off. Few of the worms find their way to the stomach of the horse through the mouth, where they hang upon the membrane until the following spring, when they are voided in the dung and excite unnecessary apprehension of inexperienced so-called grooms or owners of horses, but remedies generally kill the horses first and the bots after.

Fits After Dehorning.—S. Easton Adair, Co., Ia., had a fat old cow drop her calf. Six hours after calving she had been dehorned with the rest of his herd. In two weeks she had repeated fits. She fell as though knocked down with an ax. Probably the fits resulted from congestion of the brain. The cow has lost flesh, and, though not stated, she has ceased to yield her accustomed large flow of milk. The hocks are more angular than usual, and she is knuckled in the hind ankles. The back at times was alternately arched and swayed, showing spinal irritation. The dehorning so soon after calving may have produced epileptiform fits, but other causes may have existed.

Remedy for Chickens With the Gapes.—Mrs. K. R. Taylor, Kentucky, writes us: The authorities say the best remedy is prevention, but in a wet season this is difficult of application except by the few ~~scientific~~ poultry raisers. When prevention has failed, the thing to do is to take a long horse hair and bend it, twisting the loop so it can be probed into the chicken's throat with a spiral motion. Catch the chicken with the left hand, press its wings to its sides, hold its head back, open the bill, pull out the tongue until a coarse twine can be hooked over the raised portions at the base of the tongue and held beneath the bill firmly, while the horse hair loop is worked into the windpipe gently to the depth of two or two and a half inches of the loop. With a spiral motion twist it out, and repeat until you bring several bunches of small, bright, red worms. After all have been extracted, the chick will, perhaps, froth a little, but in ten minutes it will eat its food. If in twelve or twenty-four hours it still throws its head back and gasps, repeat the operation. Old hands say blue grass is better than horse hair, but the latter is always available. This is the preventive of sure death.

A String of Questions Answered.—T. M. Morgan, Fauquier Co., Va.: April, May, September and early in October, when dry and cool, are the proper seasons for castrating colts, and if the colt is strong and well-developed it should be performed long enough before weaning to secure perfect recovery. But if the neck is very light and the withers low the operation should be delayed until pleasant weather the following spring. Defective growth in colts too often results from too severe work and too spare food of the dam while sucking.

In spasmodic colic, danger from inflammation may be apprehended unless relieved. The pain is periodical, causing the horse to look round, bite the flank, kick the belly, lay down, roll, rise and show the greatest restlessness. Soon relief seems perfect. But after a short interval all the distressing symptoms are renewed. When the intervals of relief become longer and longer and the symptoms less and less severe and the bowels and kidneys act naturally, the case is free from danger. But should the reverse occur, the danger is imminent. Give early in severe cases:

Aloes, eight drams; tincture of aconite, thirty drops, given in a pint of flaxsee t tea, as a drench.

In wind colic: linseed oil a pint and a half with a tablespoonful of laudanum.

It is doubtful if bots produce any serious harm. The symptoms attributed to the presence of bots result from irritation of food, constipation, or wind, or spasmodic colic.

The best remedy for the skin disease supposed to be caused by St. John's wort, is prevention. Destroy the cause and the effect will cease. Root out the weeds and the grass will be more plentiful and nutritious, sponging the affected parts with hot castile soapsuds and sweet oil applied after.

Jay Eye See, 2.10.

Mr. J. I. Case, Racine, Wis., writes, "After trying every known remedy, I removed large bunch of two years' standing from a 3-years' old filly with three applications of Quinn's Ointment. It is the best preparation I have ever used or heard of. I heartily recommend it to all horsemen." For Curbs, Splints, Spavins, Windpuffs, Bunches, worth many times its price. Trial box 25 cents, silver or stamps. Regular size $1.50 delivered. Address W. B. Eddy & Co., Whitehall, N. Y.

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The movements are stem winders and stem setters, 15 fine ruby jewels in gold settings, compensation balance, patent regulator, patent Breguet hair-spring, adjusted to heat, cold and position.

The retail price of this watch is **$55-$60.** We will sell them, until our present stock is gone, for **$30,** and send them **free of charge,** to any express office in United States, giving privilege of full examination before paying anything.

We are thus putting the highest grade watch made within the reach of almost any one. If you desire to secure one of these fine watches, send your order at once, so as to not miss this opportunity. In ordering please state if plain or fancy engraving is preferred. For lower priced watches send for illustrated catalogue which will be mailed to you free.

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140 S. Third St. Philadelphia.

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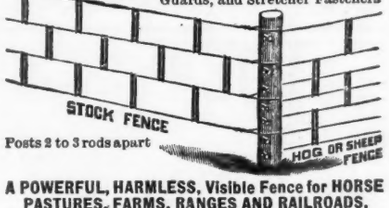
Large Smooth Wire (No. 9), Steel Stay Guards, and Stretcher Fasteners



A POWERFUL, HARMLESS, Visible Fence for HORSE PASTURES, FARMS, RANGES AND RAILROADS.
You can build any height, and, by using Hog or Sheep Guards, as close as you wish.
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Ayer's Sarsaparilla is recommended by physicians as the only sure blood purifier.

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SAMPLES FREE!

We send full information as to price, styles, size, etc., also samples and price of stamping your initial, monogram, crest, coat-of-arms, street address, etc., upon the paper.
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Massachusetts Laws protect the policy holder. Send for rates, circulars, etc.

ENSILAGE

The **SILO** is rapidly being adopted in all sections of the U. S. and portions of Canada as the cheapest possible means of harvesting and feeding the corn crop; no waste, no husking, no grinding, no toll to pay, nor time to lose, and a reserve of green feed for all seasons of the year when pasturage and other crops may fail. Double the number of stock can be kept on the same number of acres under cultivation.

Our Catalogue embraces valuable information and detailed instructions on the subject, as well as description and prices of the FAMOUS

"OHIO"
Ensilage and Fodder Cutters
THE SILVER MFG. CO., SALEM, Ohio.

HAND MADE NICKEL TRIMMED, Single Strap Harness, $12
—Write for Descriptive circular.—
THOMPSON, The Harness Man, Ridge Farm, Ill.

Publications Acknowledged.

FROM THE EXPERIMENT STATIONS.

Publications Received—June 1 to July 1, 1891.

ALABAMA—Agricultural and Mechanical College at Auburn, Bul. No. 25 (new series), April, effects on butter by feeding cotton seed and cotton-seed meal; Bul. No. 26 (new series), April, commercial fertilizers; Bul. No. 27, May, black rust of cotton.

COLORADO—Exp. Sta. at Fort Collins, Bul. No. 15, April, two insect pests.

GEORGIA—Exp. Sta. at Macon, Bul. No. 12, April, field experiments in forage plants, with analyses of the products.

KANSAS—Exp. Sta. at Experiment, Bul. No. 18, Dec., 1890, experiments with forage plants; Bul. No. 19, 1890, germination of weeviled peas, garden notes on potatoes, beans, and cabbage.

MASSACHUSETTS—Hatch Exp. Sta. at Amherst, meteorological Bul. No. 29, May.

MISSISSIPPI—Exp. Sta. at Agricultural College, third annual report, 1890; Bul. No. 14, March, injurious insects.

MISSOURI—Exp. Sta. at Agricultural College, Bul. No. 14, April, field experiments with corn.

NEBRASKA—Exp. Sta. at Lincoln, Bul. No. 17, field experiments and observations for 1890, meteorological observations for 1890.

NEW HAMPSHIRE—Exp. Sta. at Hanover, second annual report, 1890, Bul. No. 13, May, effect of food on butter and on quantity of milk; Bul. No. 14, May, silage in dairy farming.

NEW YORK—Exp. Sta. at Geneva, Bul. No. 32 (new series), June, the New York State fertilizer control and fertilizer analyses; Cornell Exp. Sta. at Ithaca, Bul. No. 27, May, the production and care of farm manures.

NORTH CAROLINA—Exp. Sta. at Raleigh, Bul. No. 74a, Dec., 1890, meteorological summary for North Carolina for December; Bul. No. 74b, Jan., 1891, meteorological summary for North Carolina for January.

NORTH CAROLINA—Exp. Sta. at Raleigh, Bul. No. 77, May, value of peavine manuring for wheat.

OHIO—Exp. Sta. at Columbus, Bul. Vol. IV? No. 2 (second series), February, Miscellaneous experiments in the control of injurious insects; some common cabbage insects, three important clover insects.

PENNSYLVANIA—Exp. Sta. at State College, annual report, 1889.

TENNESSEE—Exp. Sta. at Knoxville, Bul. Vol. III, No. 6, Dec., 1890, index to Vols. I and II; Bul. IV, No. 1, January, crab-grass hay, sorghum as a forage plant, test of feed value of first and second crop of clover, pasture grasses, black knot of the plum and cherry, pruning fruit trees, the glassy-winged soldier bug, diseases of live stock, experiment station record; Bul. Vol. IV, No. 2, April, the peanut crop of Tennessee, statistics, culture, and chemistry.

TEXAS—Exp. Sta. at College Station, Bul. No. 14, March, effect of cotton and cotton-seed meal in the dairy ration on gravity and centrifugal creaming of milk.

UTAH—Exp. Sta. at Logan, Bul. No. 6, May, trial of sleds and tillage tools.

UNITED STATES DEPARTMENT OF AGRICULTURE—Division of statistics, No. 85 (new series), June, report on the acreage of wheat and cotton, and condition of cereal crops, freight rates of transportation companies; division of botany, contributions from the United States national herbarium, Vol. II, No. 1, June, manual of plants of Western Texas, Part 1; division of entomology, periodical bulletin, Vol. III, Nos. 9 and 10, June, insect life, Bul. No. 25, destructive locusts, circular No. 2 (second series), June, the hop plant louse and remedies to be used against it; office of experiment stations, experiment station record, Vol. II, No. 11, June, circular No. 20, June, organization list of the agricultural experiment stations in the United States.

VERMONT—Exp. Sta. at Burlington, Bul. No. 24, May, potato blight and rot; Bul. No. 25, the bounty on maple sugar.

WEST VIRGINIA—Exp. Sta. at Morgantown, Bul. No. 13, January, the creamery industry; Bul. No. 15, March, raspberry gouty-gall beetle.

WYOMING—Exp. Sta. at Laramie, Bul. No. 1, May, the organization and the proposed work of the station.

BUTTER THAT SELLS WELL.

Pale, white, lard-like butter is not the kind that sells well. Rich-looking, June-yellow butter always has the preference.

Buttermakers who recognize this fact have no trouble in disposing of their product at good prices. But a uniform, natural shade can be made only when good, pure coloring is used, and for this there is nothing equal to Wells, Richardson & Co.'s Improved Butter Color. It excels in strength, purity, and brightness, and its use cannot be detected either by sight or taste. Don't allow your dealer to sell you an inferior article. Tell him the BEST is what you want, and you must have Wells, Richardson & Co.'s Improved, which is positively guaranteed never to turn rancid or color the buttermilk, and which always gives a natural June color.

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Depends on the question up.

The lamp-chimney question—what sort do you break?

Whatever sort your dealer deals in.

How, do you think, he selects his chimneys?

He buys those that cost him least; he can get the regular price for them; and the faster they break the more he sells. That's how he reasons.

Tell him you want Macbeth's "pearl top" or "pearl glass," tough glass, transparent, clear, not foggy, fine, of right shape and uniform. Tell him you'll pay him a nickel more a piece, and that will cover his extra costs twice over. Tell him you don't propose to break any more. Try your hand at ruling.

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Of Roxbury, Mass., says

Kennedy's Medical Discovery cures Horrid Old Sores, Deep Seated Ulcers of **40** years standing, Inward Tumors, and every disease of the skin, except Thunder Humor, and Cancer that has taken root. Price $1.50. Sold by every Druggist in the U. S. and Canada.

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CHEAP STRONG **WATER PROOF,** Applied by our new Patent method with ½ the labor of any other way. Unlike any other roof. **No rust or rattle.** An **Economical** and **DURABLE SUBSTITUTE** for **PLASTER** on walls. **Ornamental CARPETS** and **RUGS** of same material, **cheaper** and **better** than Oil Cloths. ☞Catalogue and **Samples Free.**

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"Money makes the mare go," and a little breeze operates the **Ideal Junior**—a little money buys it. Ask for catalogue free.

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ABSOLUTELY SAFE INVESTMENT.

ANNUAL DIVIDENDS,

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This company purchases strictly central business Real Estate in large cities, the rentals of which pay its dividends. As is universally known by all business men, this kind of real estate continually increases in value. Hence the large estates like the Sears Estate of Boston, the Fifty Associates, the Astor Estate of New York, and hundreds of other estates which could be mentioned, in all the great commercial cities of the world.

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Rooms 3, 11, Boston, Mass.

GEO. LEONARD, President.
A. A. HOWE, Treasurer.

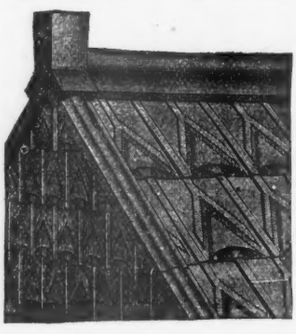
THREE MONTHS FOR TEN CENTS. Send five two-cent stamps and secure "Florida Home-seeker" for three months. Tells of best routes, low board, and homes on $1 monthly payments. **O. M. Crosby,** 99 Franklin St., N. Y.

"KEYSTONE" CORN HUSKER AND FODDER CUTTER!

Husks the corn clean as hand work and at the same time cuts the stalk into the best fodder known. Send for illustrated catalogue.

KEYSTONE MFG. CO., STERLING, ILL.

Please Mention the AMERICAN AGRICULTURIST.



Write for our lithographic advertisement, which, in colors, represents the various styles of Metal Shingles and Roofing Sundries we manufacture.

Brockton, Mass., May 6th, 1891.

Gentlemen: The redipped Galvanized Shingles have given the best of satisfaction here in Brockton to those whose roofs are covered with them. It is now some six years since one hundred and sixty-five squares were used on one roof at the Fair Grounds. I have covered three roofs this spring, which have pleased the owners very much. I consider them the best roof covering in use.

Yours truly,
JAMES P. BEAL, Builder.

The National Sheet Metal Roofing Co.,
No. 9 Cliff St., New York City.

$45.25 BUGGIES

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We sell direct to the consumer at factory prices, and by dealing direct with us you save dealer's profit. It is a duty you owe to yourself to get the most value for your money; then why pay a dealer $25.00 more than we ask for the same quality of goods? We don't want your trade until you are satisfied that our goods are exactly as we represent them.

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OUR $37.50 ROAD WAGON.

$5.25 HARNESS

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DECORAH STEEL WINDMILL and STEEL TOWER.

The Decorah Steel Windmill has the most powerful movement ever employed in a windmill; lifts the pump rod with equal ease at all parts of the stroke; the line of draft in lifting is kept directly over the center of the lifting shaft; the coil spring governor is the most perfect of windmill regulators: **THE WHEEL AND VANE ARE MADE ENTIRELY OF STEEL.**

We guarantee our eight foot mill to do the work of any ordinary ten foot mill

Is half the weight, costs you half the freight, and a much less expensive tower to carry it; has no crank or wrist pin, with their leverage to act against the wheel. No pitman. No dead center.

Will Run a Pump in a Lighter Wind Than Any Other Wind Mill On Earth.

"The World Do Move" See what we have to interest you before making contracts for any old time windmills.

GOULDS & CALDWELL CO., Mfrs. 22 & 24 N. Canal St. Chicago, Ill.

THE SUPERIOR FERTILIZER GRAIN DRILL

The BEST in the WORLD

THE SUPERIOR DRILL CO.,
SPRINGFIELD, OHIO,
Manufacturers of **GRAIN DRILLS, CULTIVATORS, CIDER MILLS HAY CARRIERS and FORKS.**
☞ Farmers, see our local Agent, or write us for catalogue and prices.

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Capacity up to 200 tons per hour. Great saving in power. Adjustable to any degree of fineness. The Gates Breaker has made more railroad ballast and road metal than all other kinds of breakers combined. Universally adopted by mining companies. Many Hundreds Used by Railway Companies. Will furnish a thousand references from Contractors, Street Superintendents, Mines, Cement Manufacturers, etc. Also manufacture

THE CORNISH ROLLS PULVERIZER.

FINE CRUSHING PLANTS, CONCENTRATORS AND OTHER MINING MACHINERY.

Address for Catalogue **GATES IRON WORKS, 50 V South Clinton Street, CHICAGO.**

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FREE TO BOYS AND GIRLS UNDER 18 WITHOUT ONE CENT OF MONEY.

If any boy or girl under 18 years of age wants a strictly first-class safety bicycle they can obtain it free, without one cent of money. We shall give away, on very easy conditions, 1000 or more. The wheels are 25 inches, with crescent steel rims and molded rubber tires, and run on hardened steel cone bearings, adjustable to wear; geared to 46 inches; detachable cranks; four to five inches throw; frame finely enameled, with nickel trimmings. Each machine is supplied with tool bag, wrench and oiler. Equal in quality to those sold on the market for $45.00. We have both boys' and girls' styles. If you want one write at once to WESTERN PEARL CO., 208 Dearborn St., Chicago, Ill. Mention this paper.

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Will be held on the new and permanent Fair Grounds at Syracuse, N. Y., September 10th to 17th, 1891. Premium list largely increased. Sweepstakes and Third Prizes added. Unusual railroad facilities for both exhibitors and visitors'

Three Great Trunk Lines of the State Have Depots on the Grounds

Which cover over 100 acres. This will be the largest and best fair ever held. For Premium Lists and full particulars

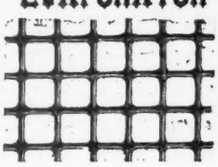
Address The NEW YORK STATE AGRICULTURAL SOCIETY, ALBANY, N. Y.

The Farmers' Choice Iron and Steel Roofing.

THE best made and lowest in price. Easily applied and suitable for all buildings. Qualities the very best, also Corrugated Iron, Crimped edge, etc.

SYKES IRON & STEEL ROOFING CO. NILES, O., and CHICAGO, Ill.
Write for Catalogue and Prices.

EVAPORATOR WIRE CLOTH.



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Galvanized after being woven by a superior process which will not poison fruit. Send for prices and samples.

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WALL PAPER of attractive styles, at *extremely low prices.* For 8c. postage we will send to any address samples with borders to match of papers ranging in price from 6c. to 50c. a roll. A. I. DIAMENT & CO., 1206 Market St., PHILADA., PA.

WHEAT FERTILIZER $20 PER TON. Sold to Farmers direct from our Works. *No agents.*
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EVERY FARMER HIS OWN MILLER

30 Years Experience.

Do your own Shelling and Grinding at Home, saving tolls and teaming to and from the Grist Mill. This work can be done rainy, windy days, when out-door work is suspended on the farm. The same Mill will cut corn stalks, saw wood, run churn, grindstone, pump water, etc. We make the

HALLADAY GEARED WIND MILL

in 11 sizes, 1½ to 40 horse power, and GUARANTEE they have no equal for Power, Durability and Storm-Defying Qualities.

Horse Powers

and **JACKS** both single and double Geared, made heavy and strong.

IXL CORN Sheller

2 HOLE

Adapted to run by hand, horse, steam or wind power. Not cheaply made, but strong, durable and effective in its working, yet light running. It is constructed similar to the large Power Shellers, and is the best 2-Hole Sheller on the market.

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Both Swinging and Sliding Tables. We make a Saw Table especially adapted to sawing long poles. Special care is taken to make these machines strong and durable.

THE IXL STALK CUTTER

made in 5 sizes, with **Safety Fly Wheel, Safety Lever,** and all late improvements.

THE IXL IRON FEED MILL

3 sizes, both Belt and Geared Mills. Can be run by any power, and especially adapted to Wind Power. Will grind any kind of grain, and is the lightest running and most effective Feed Grinder made.

IXL TANK HEATER

For warming water in Stock Tanks. Made of the best quality of iron cast in one piece, no sheet iron to rust or solder to melt and cause leak. Will burn any kind of fuel. It is very effective and takes less care to operate than any other Heater made.

We also make the

HALLADAY PUMPING WIND MILLS

18 sizes; 8 to 60 ft. diameter, and one man to 40 horse power. The **U. S. SOLID WHEEL WIND MILL,** 7 sizes. **Iron and Brass Pumps** in great variety. **Tanks** all kinds and sizes, and the **Standard Hay Tools** consisting of **Anti-Friction, Swivel, Reversible** and **Rod Hay Carriers, Harpoon** and **Grapple Horse Hay Forks, Pulleys, Floor Hooks, etc.** All goods fully guaranteed. Send for Catalogue and Prices. **Reliable Agents wanted** in all unassigned Territory.

U. S. WIND ENGINE & PUMP CO.,
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HEEBNER'S Patent LEVEL-TREAD HORSE-POWER.

With SPEED REGULATOR.
For 1, 2 and 3 Horses.

Catalogues Free.

LITTLE GIANT Threshing Machine.

Threshes Grain, Rice, Flax, Millet and Grass Seed. Fully Warranted. Feed and Ensilage Cutters, Feed Grinders, &c
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20 Yrs. WARRANTED Genuine American

COSTS NOTHING to examine this Great Bargain

Cut this out and send with your name and address and we will send the watch C. O. D. (all express charges paid by us) giving you a chance to examine it before you pay one cent.

It is elegantly engraved; hunting case, stem wind and stem set, full gents' size, and if you do not find it worth twice as much as any gold filled watch you have seen so extensively advertised, and equal to watches retailed at $85, do not take it. If when carefully examined it proves satisfactory, pay the express agent $12 (our wholesale price) and take it. **WATCH SUPPLY CO.,** 320 & 322 Dearborn St., Chicago, Ills.

State, County and Other Fairs in 1891.

PREPARED EXPRESSLY FOR THE AMERICAN AGRICULTURIST.

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To Our Readers.

If your County or District Fair does not appear in the list below, kindly request the Secretary of the Society to forward to us the name of the place where and the date when it is to be held. We desire a complete list of fairs in the United States and Canada to appear in the September number of the AMERICAN AGRICULTURIST.

STATE AND PROVINCIAL FAIRS.

Alabama	Birmingham	Oct. 20-Nov. 30
"Southern Exposition"	Montgomery	Oct. 28-Nov. 11
American Institute	New York	Sept. 30-Nov. 28
California	Sacramento	Sept. 17-19
Canada	Toronto	Sept. 7-19
Colorado	Pueblo	Sept. 24-30
Connecticut	Meriden	Sept. 16-19
Georgia	Macon	Oct. 21-29
Illinois	Peoria	Sept. 28-Oct. 2
Indiana	Indianapolis	Sept. 21-26
Iowa	Des Moines	Aug. 28-Sept. 4
Kansas	Topeka	Sept. 11-19
Kentucky		
Louisiana	Baton Rouge	Oct. 6-10
Maine		
Michigan	Detroit	Aug. 25-Sept. 4
Michigan	Lansing	Sept. 7-11
Minnesota	Hamline	Sept. 9-13
Minnesota	St. Paul	Sept. 7-12
Missouri	Sedalia	Aug. 18-Sept. 22
Montana	Helena	Aug. 22-29
Nebraska	Lincoln	Sept. 4-11
New Jersey	Newark, "Waverley Park"	Sept. 21-25
New Jersey "Interstate"	Trenton	Sept. 28-Oct. 2
New Mexico	Albuquerque	Sept. 21-26
Nevada	Reno	Sept. 21-26
New York	Syracuse	Sept. 10-17
North Carolina	Raleigh	Oct. 1-Dec. 1
Ohio	Columbus	Sept. 14-18
Ohio "Interstate"	Toledo	Sept. 7-12
Rhode Island	Narragansett Park	Sept. 22 26
South Carolina	Columbia	Nov. 9-13
South Dakota	Sioux Falls	Sept. 21-25
Tennessee "Interstate"	Memphis	Oct. 13-17
Texas	San Antonio	Nov. 10-22
Texas	Dallas	Oct. 17-Nov. 1
Utah	Salt Lake City	Oct. 6-10
Washington	Walla Walla	Sept. 28-Oct. 3
Wisconsin	Milwaukee	Sept. 14-18

ALABAMA.

Butler	Greenville	Oct. 20-23
Lee	Opelika	Nov. 16-21
Madison	Huntsville	Oct. 6-9

ARKANSAS.

Benton	Rogers	Oct. 13-16
Boone	Harrison	Oct. 7-10
Bradley	Warren	Oct. 7-9
Independence	Batesville	Oct. 10-16
Phillips	Helena	Oct. 20-24
Sebastian	Fort Smith	Oct. 14 18
St. Francis	Forrest City	Oct. 13-18

ARKANSAS DISTRICT.

Ouachita	Camden	Oct. 20-24

CALIFORNIA.

Fresno	Fresno City	Sept. 29-Oct. 3
Napa	Napa City	Aug. 17-22
Plumas	Quincy	Sept. 21-26
Tehama	Red Bluff	Aug. 18 22

CALIFORNIA DISTRICT.

Nevada	Glenbrook Park	Sept. 1-5
San Benito	Hollister	Oct. 6-10
San Joaquin	Stockton	Sept. 22-Oct. 3
Santa Barbara	Santa Barbara	Aug. 18-21
Santa Clara	San Jose	Aug. 10-15
Santa Cruz	Santa Cruz	Sept. 30-Oct. 3
Siskiyou	Yreka	Sept. 29-Oct. 2
Tulare	Visalia	Oct. 5-10

COLORADO.

Gunnison	Gunnison	Sept. 22-25
Larimer	Fort Collins	Sept. 22 25

COLORADO DISTRICT.

Montrose	Montrose	Sept. 30-Oct. 3

CONNECTICUT.

Litchfield	Watertown	Sept. 22-24
Litchfield	New Milford	Sept. 9-11
New Haven	Guilford	Sept. 30
New London	Norwich	Sept. 22-24
Tolland	Rockville	Sept. 8-10
Windham	Willimantic	Sept. 29-Oct. 1
Windham	Brooklyn	Sept. 15-17

GEORGIA.

Calhoun	Morgan	Nov. 11-14
Clayton	Jonesboro	Sept. 1-5
Fulton	Atlanta	Oct. 19 Nov. 7
Hall	Gainesville	Nov. 10-13
Hancock	Sparta	Oct. 21-27
Jefferson	Louisville	Oct. 28-30
Morgan	Madison	Oct. 29-30
Warren	Warrenton	Oct. 14-18

ILLINOIS.

Adams	Camp Point	Aug. 24-28
Alexander	Cairo	Sept. 1-5
Boone	Belvidere	Sept. 18-1
Brown	Mt. Sterling	Aug. 17-21
Bureau	Princeton	Sept. 8-11
Carroll	Mt. Carroll	Sept. 15-19
Cass	Virginia	Aug. 3-8
Champaign	Champaign	Aug. 28-29
Christian	Pana	Aug. 25-29
Christian	Assumption	Aug. 31-Sept. 4
Coles	Charleston	Sept. 8-12
Crawford	Robinson	Sept. 22-25
DeKalb	Sandwich	Sept. 15-18
DeWitt	Farmer City	Sept. 1-4
DeWitt	Clinton	Aug. 10-14
Du Page	Wheaton	Sept. 8-10
Edgar	Paris	Aug. 31-Sept. 4
Effingham	Watson	Sept. 22-25
Edwards	Albion	Sept. 29-Oct. 2
Fayette	Vandalia	Oct. 13-16
Franklin	Benton	Sept. 15-18
Gallatin	Shawneetown	Aug. 25-29
Hamilton	McLeansboro	Sept. 8-11
Hancock	Carthage	Sept. 7-11
Hardin	Elizabethtown	Aug. 11 14
Henry	Cambridge	Aug. 31-Sept. 4
Henry	Kewanee	Sept. 14-18
Iroquois	Watseka	Aug. 11 14
Iroquois	Milford	Aug. 18-2
Jasper	Newton	Sept. 15-18
Jersey	Jerseyville	Oct. 13- 6
Jo Daviess	Galena	Sept. 29 Oct. 2
Johnson	Vienna	Sept. 15-18
Kankakee	Kankakee	Sept. 8-11
Kendall	Yorkville	Sept. 1-4
Knox	Knoxville	Sept. 7-11
Lake	Libertyville	Sept. 22-25
LaSalle	Mendota	Sept. 1-4
Livingston	Fairbury	Sept. 7-11
Logan	Atlanta	Sept. 1-4
Macoupin	Carlinville	Sept. 1-4
Marshall	Wenona	Sept. 21-25
McLean	Bloomington	Aug. 25-28
McLean	Saybrook	Sept. 15-18
McDonough	Macomb	Aug. 24-28
McHenry	Woodstock	Aug. 25-28
Menard	Petersburg	Sept. 1-4
Mercer	Aledo	Sept. 22-25
Moultrie	Sullivan	Sept. 1-5
Ogle	Oregon	Sept. 22-25
Ogle	Rochelle	Sept. 8-11
Peoria	Dunlap	Sept. 16-18
Perry	Pinckneyville	Oct. 6-9
Pike	Griggsville	Aug. 10-14
Richland	Olney	Oct. 20-23
Saline	Harrisburg	Aug. 4-7
Saline	Eldorado	Aug. 11-15
Sangamon	Springfield	Sept. 7-11
Schuyler	Rushville	Aug. 10-14
Shelby	Shelbyville	Sept. 15 19
Stark	Toulon	Sept. 7-11
Tazewell	Mackinaw	Aug. 31-Sept. 4
Tazewell	Delavan	Aug. 25-28
Union	Jonesboro	Sept. 15-18
Union	Ana	Aug. 25-28
Vermillion	Catlin	Sept. 8-11
Vermillion	Danville	Sept. 1
Wabash	Mt. Carmel	Sept. 15-18
Warren	Monmouth	Sept. 8-11
White	Carmi	Sept. 1-5
Williamson	Marion	Sept. 24-27
Whiteside	Morrison	Sept. 1-4
Winnebago	Rockford	Sept. 1-4

ILLINOIS DISTRICT.

Alexander	Cairo	Sept. 1-5
Hancock	La Harpe Aug. 31	Sept. 4
Jackson	Maquoketa	Sept. 8-11
Macon	Macon	Aug. 18-21
Pike	Barry	Aug. 4-7
Piatt	Monticello	Aug. 17-21
Stark	Wyoming	Sept. 1-4
St. Clair	Belleville	Sept. 1-5
Stephenson	Freeport	Sept. 8-11
Vermillion	Hoopeston	Aug. 24-28

INDIANA.

Benton	Boswell	Sept. 7 12
Boone	Lebanon	Aug. 17-21
Carroll	Camden	Sept. 1-4
Clinton	Frankfort	Aug 25 29
Crawford	Marengo	Aug. 3 -Sept. 5
DeKalb	Waterloo	Oct. 5-9
Delaware	Muncie	Aug. 18-21
DuBois	Huntingburg	Sept. 14-19
Elkhart	Goshen	Sept. 21-25
Floyd	New Albany	Sept. 14-18
Fountain	Covington	Sept. 14-18
Fulton	Rochester	Sept. 2-5
Grant	Marion	Aug. 25-28
Gibson	Princeton	Sept. 7-12
Greene	Bloomfield	Sept. 15-20
Hancock	Greenfield	Aug. 18-21
Hamilton	Sheridan	Aug. 31-Sept. 4
Harrison	Corydon	Aug. 25-28
Henry	New Castle	Aug. 11-14
Howard	Poplar Grove	Sept. 28-Oct. 2
Huntington	Warren	Sept. 1-5
Huntington	Huntington	Sept. 8-17
Jefferson	Madison	Aug. 11-14
Jennings	North Vernon	Aug. 4 7
Johnson	Franklin	Sept. 15-19
Knox	Vincennes	Oct. 12-17
LaPorte	LaPorte	Sept. 29-Oct. 2
Lawrence	Bedford	Oct. 6-10
Marshall	Bremen	Sept. 29-Oct. 2
Marshall	"Culver Park" Lake Maxinkuckee	Sept. 22-25
Miami	Peru	Sept. 15-18
Monroe	Bloomington	Sept. 14-18
Montgomery	Crawfordsville	Sept. 7-11
Newton	Morocco	Sept. 15-18
Orange	Paoli	Sept. 9-12
Owen	Spencer	Aug. 17-22
Posey	New Harmony	Sept. 14-18
Posey	Mt. Vernon	Sept. 22-26
Pulaski	Winamac	Sept. 15-18
Putnam	Bainbridge	Aug. 31-Sept. 4
Randolph	Winchester	Sept. 8-11
Rush	Rushville	Sept. 8 12
St. Joseph	Mishawaka	Sept. 14-18
Shelby	Shelbyville	Sept. 1-5
Spencer	Rockport	Sept. 21-26
Steuben	Angola	Sept. 22-25
Switzerland	East Enterprise	Sept. 1-4
Tippecanoe	LaFayette	Aug. 31-Sept. 4
Tipton	Tipton	Aug. 17-21
Vanderburg	Evansville	Sept. 28 Oct. 3
Vermillion	Newport	Sept. 28-Oct. 2
Vigo	Terre Haute	Aug. 24-28
Wabash	Wabash City	Sept. 22 26
Wabash	No. Manchester	Sept. 29 Oct. 2
Warrick	Boonville	Oct. 5-10
Washington	Pekin	Sept. 8-12
Washington	Salem	Sept. 1-4
Wayne	Richmond	Aug. 25-28

INDIANA DISTRICT.

DeKalb	Auburn	Sept. 7-11
Fountain	Covington	Sept. 14-18
Kosciusko	Warsaw	Sept. 14-18
Posey	Mt. Vernon	Sept. 21-25

IOWA.

Adams	Corning	Sept. 21-25
Audubon	Audubon	Sept. 14-17
Buchanan	Independence	Sept. 30 Oct. 3
Calhoun	Rockwell City	Sept. 15-18
Carroll	Carroll	Sept. 21-24
Cass	Atlanta	Sept. 7-10
Cedar	Tipton	Sept. 1-5
Chickasaw	New Hampton	Sept. 2-4
Clarke	Osceola	Sept. 8-11
Clayton	National	Sept. 8-11
Crawford	Denison	Sept. 17 19
Dallas	Adell	Aug. 25-28
Davis	Bloomfield	Aug. 25-28
Delaware	Manchester	Sept. 8-11
Fayette	West Union	Sept. 1 4
Floyd	Charles City	Sept. 10 12
Greene	Jefferson	Aug. 18-21
Grundy	Grundy Center	Sept. 15-17
Hardin	Eldora	Sept. 8-11
Howard	Cresco	Sept. 1-4
Ida	Ida Grove	Sept. 15-17
Jasper	Newton	Sept. 15-18
Jones	Anamosa	Aug 25-28
Kossuth	Algona	Sept. 23 25
Linn	Central City	Sept. 15-18
Louisa	Wapello	Aug. 25-28
Lyon	Rock Rapids	Sept. 15-17
Madison	Winterset	Sept. 28-Oct. 1
Marion	Knoxville	Aug. 18-21
Mitchell	Osage	Sept. 9-11
Montgomery	Red Oak	Sept. 14-18
Muscatine	Muscatine	Sept. 15-18
Osceola	Sibley	Sept. 11-12
Page	Clarinda	Aug. 31-Sept. 4
Palo Alto	Emmettsburg	Sept. 16-18
Pocahontas	Fonda	Sept. 15 18
Ringgold	Mount Ayr	Sept. 15 18
Sac	Sac City	Sept. 9-11
Scott	Davenport	Sept. 7 11
Shelby	Harlan	Aug. 25-28
Tama	Toledo	Sept. 29 Oct. 1
Union	Afton	Sept. 15-18
Van Buren	Keosauqua	Sept. 15-18
Wapello	Ottumwa	Aug. 18-21
Warren	Indianola	Sept. 15-18
Washington	Washington	Sept. 15-18
Winnebago	Forest City	Sept. 8 12
Winneshiek	Decorah	Sept. 8-10
Worth	Northwood	Sept. 15-17
Wright	Clarion	Sept. 15-18

IOWA DISTRICT.

Jones	Anamosa	Aug. 25-28
Shelby	Shelby	Sept. 29-Oct. 2
Van Buren	Milton	Sept. 8-11
Wapello	Agency	Sept. 29-Oct. 2

KANSAS.

Anderson	Garnett	Aug. 26-29
Chase	Cottonwood Falls	Aug. 19-21
Coffey	Burlington	Sept. 21-25
Crawford	Girard	Sept. 1-4
Jefferson	Oskaloosa	Sept. 8-10
Linn	Mound City	Sept. 15-19
Miami	Paola	Sept. 29-Oct. 3
Montgomery	Independence	Sept. 8-11
Nemaha	Seneca	Sept. 22-25
Neosho	Erie	Oct. 6 9
Phillips	Phillipsburg	Sept. 22 25
Pottawatomie	Wamego	Sept. 29-Oct. 2
Rawlins	Atwood	Oct. 7-9
Wilson	Fredonia	Sept. 2-4

KENTUCKY.

Adair	Columbia	Aug. 4-7
Anderson	Lawrenceburg	Aug. 18-21
Bath	Sharpsburg	Aug. 11-14
Bourbon	Paris	Sept. 1-5
Boyle	Danville	Aug. 4-7
Caldwell	Princeton	Oct. 7-10
Campbell	Alexandria	Sept. 1-5
Christian	Hopkinsville	Oct. 22-24
Clark	Winchester	Sept. 8-12
Daviess	Owensboro	Oct. 6-10
Fayette	Lexington	Aug. 25 29
Hardin	Elizabethtown	Sept. 8-11
Hart	Horse Cave	Sept. 15-18
Henderson	Henderson	Sept. 8-12
Hopkins	Madisonville	Aug. 12-15
Jefferson	Fern Creek	Aug. 18-20
Jessamine	Nicholasville	Aug. 11-14
Laurel	London	Aug 26-29
Leslie	Hyden	Aug. 22
Mason	Maysville	Aug. 18 22
Mason	Germantown	Sept. 30
McCracken	Paducah	Oct 14 16
Mercer	Harrodsburg	July 28-31
Muhlenberg	Greenville	Oct 14-17
Nelson	Bardstown	Sept. 1-5
Ohio	Hartford	Sept. 30-Oct 3
Oldham	La Grange	Sept. 2
Owen	Owenton	Sept. 29-Oct. 3
Pulaski	Somerset	Sept. 8-11
Shelby	Shelbyville	Aug. 25-28
Taylor	Campbellsville	Aug. 11 14
Union	Uniontown	Aug. 18-22

LOUISIANA.

Caddo	Shreveport	Nov. 3 7
East Feliciana	Clinton	Oct. 27-30

MAINE.

Aroostook	"Maple Grove Park" Houlton	Sept. 30
Franklin	Farmington	Sept. 29 Oct. 1
Oxford	South Paris	Sept. 15-17
Penobscot	"Maplewood Park" Bangor	Sept. 1-4
Somerset	Skowhegan	Sept. 15-17

MARYLAND.

Baltimore	Timonium	Sept. 8-11
Frederick	Frederick City	Oct. 13-16
Harford	Belair	Oct. 13-16
Montgomery	Rockville	Sept. 2-4
Talbot	Easton	Sept. 1-4
Washington	Hagerstown	Oct. 13-16

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 15-16
Berkshire	Pittsfield	Sept. 15-18
Berkshire	Great Barrington	Sept. 30-Oct. 2
Bristol	Taunton	Oct. 7-10
Dukes	West Tisbury	Oct. 6-8
Essex	Lawrence	Sept. 16-17
Franklin	Greenfield	Sept. 24-25
Hampden	Palmer	Sept. 22-23
Hampshire	Northampton	Oct. 7-9
Middlesex North.	Lowell	Sept. 22-24
Nantucket	Nantucket	Sept. 2-3
Plymouth	Hingham	Sept. 29-30
Plymouth	Bridgewater	Sept. 24-25
Worcester	Worcester	Sept. 1-4
Worcester	Fitchburg	Sept. 22-23
Worcester	Athol	Oct. 6-7
Worcester	Barre	Sept. 24-25
Worcester	Oxford	Sept. 22-23
Worcester	Sturbridge	Sept. 17-18

MASSACHUSETTS DISTRICT.

Berkshire	No. Adams	Sept. 22-24

MICHIGAN.

Allegan	Allegan	Sept. 29-Oct. 2
Antrim	Bellaire	Sept. 29 Oct. 1
Barry	Hastings	Sept. 22-25
Branch	Coldwater	Sept. 21-25
Calhoun	Marshall	Sept. 29-Oct. 2
Cass	Dowagiac	Sept. 29-Oct. 2
Charlevoix	East Jordan	Sept. 30-Oct. 2
Eaton	Charlotte	Sept. 29-Oct. 2
Genesee	Flint	Sept. 15-18
Grand Traverse	Traverse City	Sept. 8-11
Hillsdale	Hillsdale	Sept. 28-Oct. 2
Hillsdale	Litchfield	Oct. 6-9
Ingham	Stockbridge	Oct. 6-8
Isabella	Mt. Pleasant	Sept. 22-25
Kalamazoo	Kalamazoo	Sept. 29-Oct. 2
Kent	Grand Rapids	Sept. 14-18
Kent	Cedar Springs	Sept. 8-11
Lapeer	Hadley	Oct. 6-8
Lenawee	Adrian	Sept. 21-25
Lenawee	Morenci	Sept. 16-18
Livingston	Howell	Sept. 22-25
Mecosta	Big Rapids	Sept. 30 Oct. 2
Menominee	Menominee	Sept. 7-11
Midland	Midland	Sept. 15-18
Monroe	Petersburg	Sept. 15-17
Oakland	Pontiac	Sept. 29 Oct. 2
Oceana	Hart	Sept. 22-25
Otsego	Gaylord	Sept. 28-29
St. Clair	Port Huron	Sept. 22-25
St. Joseph	Centreville	Oct. 6-9
Washtenau	Ann Arbor	Sept. 29-Oct. 2
Wayne	Plymouth	Sept. 22-25

MICHIGAN DISTRICT.

Ionia	Ionia	Sept. 22-25
Lapeer	Lapeer	Sept. 22-25
Tuscola	Caro	Sept. 30 Oct. 3
Wexford	Cadillac	Sept. 17-19

MINNESOTA.

Anoka	Anoka	Sept. 3-5
Cottonwood	Windom	Sept. 16-18
Douglas	Alexandria	Sept. 29-Oct. 2
Faribault	Blue Earth City	Sept. 17 19
Fillmore	Preston	Sept. 14-17
Freeborn	Albert Lea	Sept. 15-18
Houston	Caledonia	Sept. 22-26
Jackson	Jackson	Sept. 16 17
Martin	Fairmount	Sept. 21-23
Meeker	Litchfield	Sept. 22-24
Mower	Austin	Sept. 14-18
Murray	Currie	Sept. 17-18
Nicollet	St. Peter	Sept. 17-19
Olmsted	Rochester	Aug. 31-Sept. 5
Ramsey	Hamline	Sept. 7-12
Sibley	Arlington	Sept. 1-5
Stearns	St. Cloud	Sept. 14-17
Steele	Owatonna	Sept. 3-5
Stevens	Morris	Sept. 17-19
Wilkin	Breckenridge	Sept. 29-Oct. 2
Winona	Winona	Aug. 24-29

MISSOURI.

Adair	Kirksville	Sept. 7-11
Atchison	Rockport	Sept. 15 18
Audrain	Mexico	Aug. 3-8
Caldwell	Hamilton	Aug. 25-29
Carroll	Carrollton	Sept. 8-12
Cass	Belton	Aug. 18-22
Clark	Kahoka	Aug. 25-28
Dade	Lockwood	Sept. 15-18
Gasconade	Hermann	Sept. 4-5
Gentry	Albany	Sept. 1-4
Jackson	Kansas City	Oct. 3-11
Jasper	Carthage	Sept. 15-18
Johnson	Holden	Aug. 25-28
LaFayette	Higginsville	Aug. 18
Lincoln	Troy	Sept. 8-11
Livingston	Chillicothe	Sept. 28-Oct. 2
Marion	Palmyra	Sept. 29-Oct. 3
Moniteau	California	Sept. 22-24
Monroe	Paris	Aug. 18-23

Pike	Louisiana	July 27 31
Platte	Platte City	Aug. 25 29
Polk	Bolivar	Sept. 15-19
St. Charles	St. Charles	Sept. 16 18
Scotland	Memphis	Sept. 1-4
Sullivan	Milan	Sept. 1-5

MISSOURI DISTRICT.

Daviess	Jamesport	Sept. 1-4
Grundy	Trenton	Sept. 8-11
Randolph	Moberly	Aug. 11-15

MISSISSIPPI.

Grenada	Grenada	Oct. 28-30
Noxubee	Macon	Oct. 13-16

NEBRASKA.

Adams	Hastings	Oct. 6 9
Antelope	Neligh	Sept. 23-25
Burt	Tekamah	Sept. 29 Oct. 2
Butler	David City	Sept. 22-25
Cass	Plattsmouth	Sept. 15-18
Colfax	Schuyler	Sept. 30-Oct. 2
Custer	Broken Bow	Sept. 22-25
Dawson	Lexington	Sept. 22-25
Dixon	Ponca	Sept. 23 25
Dodge	Fremont	Sept 29-Oct. 2
Douglas	Omaha	Aug. 31-Sept. 4
Fillmore	Geneva	Sept. 15-18
Franklin	Franklin	Sept. 22-25
Gage	Beatrice	Sept. 22-25
Hall	Grand Island	Sept. 1 4
Hamilton	Aurora	Sept. 15-18
Hitchcock	Culbertson	Sept. 22-25
Jasper	Elwood	Sept. 17-19
Jefferson	Fairbury	Sept. 15-18
Johnson	Tecumseh	Sept. 24-26
Keith	Ogalalla	Sept. 22-25
Lincoln	No. Platte	Sept. 15-18
Madison	Madison	Sept. 23-25
Merrick	Central City	Sept. 14-17
Nemaha	Auburn	Sept. 29-Oct. 2
Otoe	Syracuse	Sept. 16-18
Platte	Columbus	Sept. 16-18
Polk	Osceola	Sept. 29 Oct. 2
Rock	Bassett	Sept. 30 Oct. 2
Saline	Wilber	Sept. 1-4
Sarpy	Papillion	Sept. 16-19
Saunders	Wahoo	Sept. 22-25
Seward	Seward	Sept. 29-Oct. 2
Stanton	Stanton	Sept. 14-17
Thayer	Hebron	Sept. 22-25
Webster	Red Cloud	Oct. 5-9
York	York	Sept. 22-25

NEBRASKA DISTRICT.

Richardson	Falls City	Sept. 15-18

NEW HAMPSHIRE.

Cheshire	Keene	Sept. 9-10
Cheshire	Rindge	Sept. 30
Coos	Colebrook	Sept. 29-Oct. 1
Coos	Whitefield	Sept. 30-Oct. 1
Grafton	Canaan	Sept. 22-24
Merrimack	Warner	Sept. 23-24
Merrimack	New London	Sept. 22
Merrimack	Tilton	Sept. 15 17
Rockingham	Southampton	Sept. 30-Oct. 1
Strafford	Rochester	Sept. 22-25
Sullivan	Newport	Oct. 7

NEW JERSEY.

Burlington	Mt. Holly	Sept. 14-18
Cumberland	Bridgeton	Aug. 18 20
Somerset	Somerville	Sept. 15-17
Salem	Woodstown	Aug. 25-27

NEVADA.

Lander	Austin	Sept. 29-30

NEW YORK.

Albany	Albany	Aug. 26 Sept. 1
Allegany	Cuba	Sept. 22-25
Allegany	Angelica	Sept. 8-11
Broome	Windsor	Sept. 15-18
Broome	Whitney's Point	Sept. 1 4
Cattaraugus	Little Valley	Sept. 1-4
Clinton	Plattsburgh	Sept. 8-11
Columbia	Hudson	Sept. 1 4
Columbia	Chatham	Sept. 8-11
Chautauqua	Jamestown	Aug. 31-Sept. 3
Chemung	Elmira	Sept. 29-Oct. 2
Delaware	Delhi	Sept. 1-3
Dutchess	Poughkeepsie	Sept. 22-25
Essex	Westport	Sept. 1-4
Franklin	Malone	Sept. 22 24
Fulton	Johnstown	Sept. 7-10
Greene	Cairo	Aug. 26 28
Lewis	Lowville	Sept. 15-18
Livingston	Geneseo	Sept. 30-Oct. 2
Monroe	Rochester	Sept. 21-25
Montgomery	Fonda	Aug. 31-Sept. 3
Niagara	Lockport	Sept. 17-19
Ontario	Canandaigua	Sept. 29-Oct. 1
Orleans	Albion	Sept. 24-26
Oswego	Oswego	Sept. 1-4
Otsego	Cooperstown	Sept. 21 23
Putnam	Carmel	Aug. 25-28
Queens	Mineola, L. I.	Sept. 22 26
Rockland	Spring Valley	Sept. 22-25
Rockland	New City	Sept. 8-11
St. Lawrence	Canton	Sept. 15 18
Saratoga	Ballston Spa	Sept. 8-11
Schoharie	Schoharie	Sept. 22-24
Schoharie	Cobleskill	Sept. 28-Oct. 1
Schuyler	Watkins	Sept. 30-Oct. 2
Seneca	Waterloo	Sept. 29 Oct. 1
Steuben	Bath	Sept. 29 Oct. 2
Steuben	Hornellsville	Aug. 24-28
Suffolk	Riverhead	Sept. 29-Oct. 1
Sullivan	Monticello	Sept. 8-10
Tioga	Owego	Sept. 8-10
Washington	Fort Edward	Sept. 7 11
Wayne	Lyons	Sept. 30-Oct. 3
Westchester	White Plains	Sept. 28 Oct. 3
Wyoming	Warsaw	Sept. 29 30
Yates	Penn Yan	Sept. 22 25

NORTH CAROLINA.

Bladen	Elizabethtown	Oct. 18-21

OHIO.

Allen	Lima	Sept. 15-18
Auglaize	Wapakoneta	Sept. 24-Oct. 2
Ashland	Ashland	Sept. 1 4
Ashtabula	Jefferson	Sept. 22 25
Athens	Athens	Sept. 22-24
Belmont	St. Clairsville	Sept. 29-Oct. 1
Butler	Hamilton	Oct. 5-9
Carroll	Carrollton	Sept. 22-25
Champaign	Urbana	Aug. 25-28
Clermont	Batavia	Aug. 31-Sept. 4
Clinton	Wilmington	Sept. 1-4
Clinton	Sabina	July 27-31
Crawford	Bucyrus	Sept. 22-25
Darke	Greenville	Aug. 31-Sept. 4
Delaware	Delaware	Sept. 8-11
Erie	Sandusky	Sept. 15-18
Fairfield	Lancaster	Oct. 13-17
Gallia	Gallipolis	Aug. 11-14
Greene	Xenia	Aug. 11-14
Guernsey	Washington	Sept. 29 Oct. 2
Hamilton	Carthage	Aug. 18-22
Hancock	Findlay	Oct. 7-10
Hardin	Kenton	Sept. 1-4
Harrison	Cadiz	Sept. 1 4
Henry	Napoleon	Sept. 8-11
Hocking	Logan	Sept. 9 12
Holmes	Millersburgh	Sept. 29-Oct. 2
Huron	Norwalk	Sept. 8 11
Knox	Mt. Vernon	Sept. 8-11
Lake	Painesville	Aug. 25-29
Licking	Newark	Sept. 29-Oct. 2
Logan	Bellefontaine	Sept. 29-Oct. 2
Lorain	Elyria	Sept. 29-Oct. 2
Madison	London	Sept 8 11
Mahoning	Youngstown	Sept. 1-4
Marion	Marion	Sept. 29-Oct. 2
Medina	Medina	Sept. 1 3
Mercer	Celina	Aug. 25-28
Miami	Troy	Sept. 28-Oct. 2
Montgomery	Dayton	Sept. 7-11
Morgan	McConnelsville	Sept. 14-17
Morrow	Mt. Gilead	Oct. 6-9
Muskingum	Zanesville	Sept. 1-4
Ottawa	Port Clinton	Sept. 24-25
Paulding	Paulding	Sept. 15-18
Perry	New Lexington	Aug. 26-28
Perry	Somerset	Oct. 21-24
Portage	Ravenna	Sept. 21-23
Preble	Eaton	Sept. 21-25
Putnam	Ottawa	Sept. 29-Oct. 3
Richland	Mansfield	Sept. 8-11
Ross	Chillicothe	Aug. 11-14
Sandusky	Tremont	Sept. 29-Oct. 2
Sandusky	Clyde	Sept. 1-4
Seneca	Tiffin	Sept. 29-Oct. 2
Seneca	Fostoria	Sept. 1-4
Shelley	Sidney	Sept 22-25
Stark	Canton	Sept. 28-Oct. 2
Summit	Akron	Oct. 6-9
Trumbull	Warren	Sept. 8 11
Tuscarawas	Canal Dover	Sept. 22-25
Union	Marysville	Sept. 22-25
Van Wert	Van Wert	Sept. 8-11
Warren	Lebanon	Aug. 25-28
Wayne	Wooster	Sept. 22-25
Wayne	Burton	Sept. 15-18
Wood	Bowling Green	Sept. 29-Oct. 3

OHIO DISTRICT.

Clarke	Springfield	Sept. 1-4
Fulton	Wauseon	Sept. 22-25
Scioto	Portsmouth	Aug. 4-7
Vinton	McArthur	July 28-31

OREGON.

Clackamas	Marquam	Sept. 23-25
Harney	Harney City	Sept. 18
Marion	Salem	Sept. 14-19

PENNSYLVANIA.

Allegheny	Tarentum	Aug. 25-28
Armstrong	Dayton	Sept. 29 Oct. 2
Beaver	Hookstown	Aug. 19-21
Berks	Reading	Sept. 15-18
Bradford	Towanda	Sept. 22-25
Bradford	Canton	Sept. 15-18
Bradford	Troy	Aug. 25 28
Bucks	Doylestown	Sept. 23-25
Butler	Butler	Sept. 8-11
Cambria	Ebensburg	Sept. 29-Oct. 2
Carbon	Lehighton	Oct. 6-9
Center	Bellefonte	Sept 14-19
Chester	Oxford	Sept. 23-25
Clarion	Clarion	Sept. 15-18
Clearfield	DuBois	Sept. 1-3
Columbia	Bloomsburg	Oct. 14-17
Columbia	Berwick	Sept. 2-5
Columbia	Benton	Oct. 7-10
Cumberland	Carlisle	Sept. 29-Oct. 2
Crawford	Conneautville	Sept. 15-18
Crawford	Cochranton	Sept. 9-11
Crawford	Titusville	Sept. 1-4
Crawford	Cambridgeboro	Sept. 22-25
Dauphin	Gratz	Sept. 22-25
Erie	Corry	Sept. 15-18
Erie	Edinboro	Sept. 8-11
Fayette	Uniontown	Aug. 26-29
Greene	Carmichaels	Oct. 7 8
Indiana	Indiana	Sept. 30 Oct. 3
Jefferson	Brookville	Sept. 22-25
Juniata	Port Royal	Sept. 22 25
Lackawanna	Scranton	Sept. 22-25
Lawrence	New Castle	Aug. 25-28
Lehigh	Allentown	Sept. 28-Oct 2
Luzerne	Wyoming	Sept. 8-11
Luzerne	Dallas	Sept. 30-Oct. 3
Lycoming	Hughesville	Oct. 7-10
Mercer	Mercer	Sept. 15-17
Mercer	Stoneboro	Sept. 29-Oct. 1
Monroe	Stroudsburg	Sept. 1-5
Montgomery	Pottstown	Oct. 6-9
Montour	Danville	Oct. 6-9
Northampton	Nazareth	Oct. 6-9
Northumberland	Milton	Sept. 29-Oct. 2
Perry	Newport	Sept. 15-18
Potter	Coudersport	Sept 16-18
Schuylkill	Orwigsburg	Sept. 1-4
Schuylkill	Ringtown	Aug. 26-28
Sullivan	Forksville	Sept. 30-Oct. 2
Susquehanna	Montrose	Sept. 29-30
Susquehanna	Harford	Sept. 23-24
Tioga	Mansfield	Sept. 22-25
Union	Lewisburg	Oct. 7-9
Warren	Warren	Sept 8-11
Washington	Burgettstown	Oct. 6-8
Washington	Washington	Aug. 31-Sept. 4
Wayne	Honesdale	Sept. 29-Oct. 1
Westmoreland	Greensburgh	Oct. 6-9
Wyoming	Tunkhannock	Sept. 16-18
York	York	Oct. 8-10
York	Hanover	Sept. 15-18

RHODE ISLAND.

Washington	West Kingston	Sept. 14-17

SOUTH CAROLINA.

Chester	Chester	Oct. 28-31
Fairfield	Winnsboro	Nov. 3-4
Mason	Pt. Pleasant	Aug. 25-28

SOUTH DAKOTA.

Campbell	Mound City	Sept. 30-Oct. 1
Union	Elk Point	Sept. 10-12

TENNESSEE.

Anderson	Clinton	Sept. 1-4
Bedford	Shelbyville	Sept. 3-5
Dyer	Dyersburg	Oct. 13-17
Fayette	Somerville	Oct. 6 19
Giles	Pulaski	Oct. 13-16
Gibson	Trenton	Sept. 13
Henry	Paris	Oct. 8-10
Lincoln	Fayetteville	Sept. 30-Oct. 3
Loudon	Loudon	Sept. 15-17
Madison	Jackson	Oct. 20-24
Marshall	Lewisburg	Sept. 22-25
Maury	Columbia	Sept. 15-19
Montgomery	Clarksville	Oct. 28-31
Polk	Cookstown	Oct. 7-10
Rutherford	Murfreesboro	Sept. 8-12

TEXAS.

Fannin	Bonham	Sept. 22
Grayson	Harmon	Sept. 15-Oct. 1
McLeman	McGregor	Oct. 1-8
Tom Green	San Angelo	Oct. 5-10

TEXAS DISTRICT.

Brown	Brownwood	Sept. 28-Oct. 2

UTAH.

Juab	Nephi	Oct. 17-20

VERMONT.

Bennington	Manchester Center	Sept. 8-10
Franklin	Sheldon	Sept. 9-11
Rutland	Rutland	Sept. 15-18
Rutland	Fair Haven	Sept. 22-25
Washington	Waitsfield	Sept. 1-2
Windsor	Woodstock	Sept. 22 24

VIRGINIA.

Henrico	Richmond	Oct. 27-29
Northampton	Cape Charles City	Aug. 18-21
Shenandoah	Woodstock	Oct. 6-9
Spotsylvania	Fredericksburg	Sept. 29-Oct. 1

VIRGINIA DISTRICT.

Augusta	Staunton	Oct. 1-3
Baldin	Staunton	Aug. 25-28
Frederick	Winchester	Sept. 8-11
Loudoun	Leesburg	Aug. 25-27

WASHINGTON.

King	Kent	Aug. 31-Sept. 5
Yakima	No. Yakima	Oct. 6 9

WEST VIRGINIA.

Greenbrier	Lewisburg	Sept. 1-4
Harrison	Clarksburg	Sept. 1-3
Jackson	Jackson C. H.	Sept. 14-17
Ohio	Wheeling	Sept. 7-11
Ritchie	Pennsboro	Sept. 8-11
Tyler	Middlebourne	Aug. 25-27
Wetzel	New Martinsville	Sept. 1-4
Wood	Parkersburgh	Sept. 1-4

WISCONSIN.

Barron	Chetek	Sept. 9-11
Brown	Green Bay	Sept. 1-4
Burnett	Grantsburg	Sept. 25
Columbia	Portage City	Sept. 8-11
Dane	Madison	Sept. 8-11
Fond du Lac	Fond du Lac	Sept. 8-11
Grant	Bloomington	Sept. 9-11
Iowa	Dodgeville	Aug. 26-28
Jackson	Black River Falls	Sept. 8-11
Jefferson	Jefferson	Sept. 29 Oct. 2
La Crosse	La Crosse	Aug. 31-Sept. 5
LaFayette	Darlington	Sept. 8-11
Manitowoc	Manitowoc	Sept. 8-11
Marathon	Wausau	Sept. 15-18
Outagamie	Hortonville	Sept. 30-Oct. 2
Pepin	Durand	Sept. 9-11
Pierce	Ellsworth	Sept. 21-23
Portage	Amherst	Sept. 22-24
Racine	Racine	Sept. 1-4
Rock	Janesville	Sept. 8-11
St. Croix	Hudson	Sept. 1-3
Sheboygan	Sheboygan	Sept. 22-25
Trempealeau	Whitehall	Sept. 22-24
Vernon	Viroqua	Sept. 23-25
Walworth	Elkhorn	Sept. 22 25
Waukesha	Waukesha	Aug. 25-28
Waupaca	Weyauwega	Sept. 22-24
Winnebago	Oshkosh	Sept. 21-25

CANADA.

Addington	Newburgh	Oct. 8
Argenteuil	Lachute	Sept. 23-24
Bruce	Walkerton	Sept. 28-Oct. 2
Carleton	Ottawa	Sept. 24-Oct. 3
Cornwall	Cornwall Center	Sept. 18-19
Dennis	Virden	Oct. 8-9
Dufferin	Manitou	Oct. 8-9
Dundas	Morrisburg	Sept. 15-16
Greenville	Prescott	Sept. 22-24
Haldimand	Cayuga	Sept. 29-30
Hastings	Belleville	Sept. 10-12
Huntingdon	Hemingford	Sept. 8
Joliette	Joliette	Sept. 9-10
Missisquoi	Bedford	Sept. 1-2
Ontario	Whitby	Sept. 22-24
Peterborough	Peterborough	Sept. 21-23
Peel	Brampton	Sept. 29 30
Perth	Stratford	Oct. 1-2
Prince Edward	Picton	Sept. 8-9
Renfrew	Renfrew	Sept. 22-23
Richelieu	Sorel	Oct. 1-2
St. Johns	St Johns	Sept. 8-10
Shefford	Waterloo	Sept. 15-16
Stanstead	Ayers Flat	Sept. 9-10
Waterloo	"Berlin Park"	Sept. 29 30

PRINCE EDWARD ISLAND.

Kings	Georgetown	Oct. 1
Prince	Summerside	Sept. 25

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Author of "Cruising in the Cascades," "The Big Game of North America," "Camping and Camp Outfits," etc.

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MATTERS OF BUSINESS.

Midsummer Crop Prospects.

Cotton.—The July returns to the United States Department of Agriculture show some improvement in the cotton condition during the month of June. The general average for the whole breadth has advanced three points, standing at 88.6. This is three points below the July return of last year and one above that of 1889. In but four seasons since 1874 have the July returns been so low. The slight improvement noted has been quite general throughout the whole belt, the result of favorable weather during the month. The crop is universally late, ranging locally from a few days to two weeks or more. In the Atlantic and Eastern Gulf States especially the plant is small and backward, and lack of suitable weather for chopping out has made the fields very grassy. Germination was slow and imperfect, and replanting failed to secure perfect stands. Locally considerable areas have been plowed up and given to other crops, or abandoned entirely. From Mississippi westward the plant, while somewhat backward, is of good color, making generally vigorous growth, while plantations running a sufficient number of plows are reasonably clean. There is some complaint of lack of labor. The outlook in Texas is especially good, the plant vigorous, fields well worked, and fruiting begun. Worms are reported from but two counties, both in Texas, not even an invasion of the first brood being noted anywhere else. The returns of condition by States are as follows: Virginia, 82; North Carolina, 77; South Carolina, 80; Georgia, 85; Florida, 94; Alabama, 87; Mississippi, 91; Louisiana, 90; Texas, 95; Arkansas, 93; Tennessee, 82. The temperature of the month was above the normal throughout almost the entire region; the rainfall, while rather short, was generally sufficient, and this favorable combination of meteorological conditions enabled the crop to recover somewhat from the unfavorable earlier season. The lateness of the plant will make the final outcome unusually dependent upon the length of the season.

Other Crops.—The July report of the Department of Agriculture makes the acreage, as compared with breadth harvested last year, of corn, 108.3; potatoes, 102.3; tobacco, 102.6 The reports as to condition are for corn, 92.8; winter wheat, 96.2; spring wheat, 94.1; rye, 93.9; oats, 87.6; barley, 90.9; potatoes, 95.3; tobacco, 91.1.

The Corn Crop.—The heavy increase in corn acreage is more apparent than real. The comparison is with the breadth harvested last year, when there was a loss of six million acres by abandonment on account of drought. The present return makes the acreage slightly less than seventy-eight million acres, or somewhat smaller than the area actually planted last year. Kansas and Nebraska naturally show a large increase, but their area apparently does not exceed that harvested in 1889. A further and more minute investigation will be made in the districts which suffered most from drought last year.

The crop is late in all sections on account of drought and unfavorable conditions at time of planting, and cool weather during May, but June was warm, with abundant moisture, and the crop was coming forward rapidly on July 1. In the Ohio and upper Mississippi valleys the progress during the month was especially gratifying, but in Kansas and Nebraska considerable damage resulted from excessive rainfall. In many districts the June rains prevented proper working, leaving fields foul, but a few days of sunshine would remedy this. The general average is a fraction below that of 1888 and 1890, and slightly above that of 1889. The averages of surplus States are: Ohio, 93; Indiana, 95; Illinois, 96; Iowa, 94; Missouri, 88; Kansas, 82; Nebraska, 90.

Wheat.—The condition of winter wheat is returned practically the same as in June. The crop is harvested except in its more northern habitat, with a condition the highest reported since 1879 with one exception. So far as can be judged at time of harvest, the berry is reported generally plump and in keeping with the heavy straw, but occasional mention is made of short heads. Averages of principal States are:—Pennsylvania, 98; Ohio, 97; Michigan, 89; Indiana, 99; Illinois, 98; Missouri, 98; Kansas, 84; California, 98.

The condition of spring wheat improved during June, the advance being in Minnesota and the Dakotas where the month was exceptionally favorable. Chinch bugs have appeared in portions of the Northwest, but with no appreciable damage yet. State averages are, Wisconsin, 77; Minnesota, 93; Iowa, 96; Nebraska, 96; North Dakota, 98; South Dakota, 97; Washington, 98.

Oats have improved during the month, but the general average is the lowest reported since 1879 except in 1887, and last year, when a July condition of 81.6 was followed by a practical failure of the crops. The poor condition is generally the result of drought early in the season, the present improvement having followed the seasonable rains and high temperature of June.

Potatoes—The first return of potatoes shows condition higher than the average of recent years. Tobacco is reported in a higher condition than in any year since 1886. The fruit prospect is very flattering in New England and the North Atlantic States and west of the Missouri river to the Pacific Coast. The crop in Ohio and Michigan was materially damaged by the frosts of May.

Rye—A special cable from the European agent indicates a heavy deficiency in the European rye crop.

In General.

A Welcome Visitor.—The AMERICAN AGRICULTURIST is just the thing for the farmer. It is quite a welcome visitor in our home. Many years success to you. JOHN N. BLACK, Wayne Co., Ind.

For Beekeepers.—Bee and Beekeepers' supplies of any and every kind and description may be obtained from A. I. Root, Medina, Ohio. A full descriptive and illustrated list is given in his recent catalogue.

A Fraud.—Several Connecticut subscribers inquire if the AMERICAN AGRICULTURIST employs an agent by the name of William Henry Marsh to travel about reporting the condition of the crops for this magaz ne. We know of no such party.

Van Houten's Cocoa.—Van Houten's Patent Process increases by fifty per cent the solubility of the flesh-forming elements, making of the cocoa bean an easily digestible, delicious, nourishing, and stimulating drink, readily assimilated even by the most delicate invalids and children.

Milk, Butter, and Cheese.—C. M. Winslow, Secretary of the Ayrshire Breeders' Association, has issued an interesting account of the Ayrshire records. The average yield of milk from six hundred and fourteen cows was 6109 pounds each per year, and the average yield for butter would be 221⅓ pounds per cow.

Silos and Ensilage are engaging the attention of our most prominent and progressive farmers, and are acknowledged by all to be very profitable. The Appleton Mfg. Co., whose attractive advertisement appears in our paper, are headquarters for Ensilage Cutters and Carriers, Tread Sweep and Tread Powers for running them.

Cider and Wine Mills.—As the harvest season approaches those who have grapes, apples, or any fruit to grind or press should send for the circular of the Whitman Agricultural Co., St. Louis, Mo. Their presses are perfectly adjusted for all kinds of fruit, and the quantity of cider that can be produced by their use is astonishing.

Black Leghorn Fowls.—The American Black Leghorn Club, A. W. Gardiner, Springfield, Mass., secretary, has published a neat catalogue containing the rules of the club, and history and description of the breed. A list of the officers and members and a list of all the most prominent periodicals giving special attention to poultry interests is added.

Gates and Fences.—We are in receipt of a copy of the *Coil Spring Hustler*, published by the Page Woven Wire Fence Co., of Adrian, Mich. This neat little sheet gives a good deal of useful information about setting up fences and gates in general and about the Page Fence and Gate in particular. Parties desiring information are referred to them for their illustrated catalogue.

A Good Watch for Little Money.—The Watch Supply Co., whose advertisement appears on another page of this number, are certainly not afraid of competition, as they give the buyer an opportunity of examining the watches before paying any money. This watch is sold for $12, which is much lower than timekeepers of the same quality can be bought from local jewelers.

Holstein-Friesian Association of America.—The sixth annual report issued recently shows that this enterprising association is in a most satisfactory and vigorous condition. The next meeting of the association will be held in New York city the third Wednesday in March, 1892. The officers for the current year are J. B. Dutcher, president, and Thomas B. Wales, secretary.

Good Cultivation Pays.—The Eureka Spring-Tooth Harrow manufactured by the Eureka Mower Co., Utica, N. Y., is a perfect cultivator in every respect, uniting all the desirable requisites in a first-class plow and cultivator combined. They are made in three sizes, suitable for any conditions. The catalogue of this company makes interesting reading, not to speak of the pretty picture on its cover, which is surely worth more than a postal card.

Prize Contest for Packing Salt.—The government of Netherlands, India, has announced a $4000 prize contest for the purpose of finding a good way of packing the salt as it is being retailed in Netherlands, India, for government accounts. Answers must be filed with the Department of the Colonies at The Hague before Sept 1 of this year. Circulars giving the special conditions and other information in this regard may be obtained from J. R. Planten, Consul-General of the Netherlands, New York City.

For Summer Planting.—The midsummer catalogue of Peter Henderson & Co., New York, gives a choice list of all the old and new varieties of strawberries. The excellent illustrations and careful descriptions will enable any one to make a judicious selection. This pamphlet contains also descriptions and illustrations of all the leading varieties of celery; also seeds of all the various vegetables for summer and fall sowing and planting. The Farmers' Manual of this firm contains a vast amount of information of value to every farmer.

Family Jars.—Many otherwise happy homes are made places of perpetual discord by the ill-nature of the inmates. On whom the blame must generally rest we cannot say, but when it is said that "Mrs. So-and-So is a chronic growler," and that "she makes her husband's life a burden," some kind friend should suggest the use of Beecham's Pills. They will cure that headache, nausea, or impaired digestion from which the poor woman is suffering, and which makes her so ill-natured. Twenty-five cents a box. If your druggist does not have them, send to B. F. Allen Co., 365 - 367 Canal street, New York.

Effective Irrigation and Drainage.—The Menge Pump, an illustration of which is presented on their frontis page, is rapidly being employed where large quantities of water are to be raised for drainage or irrigation purposes. It is simple in construction, light running, and does not get out of order. The pumps are made of any size required, from one thousand to five million gallons capacity per hour. A neat pamphlet, giving full descriptions and instructions for the use of these pumps, and also of the Menge Patent Dredge, is issued for free distribution by the manufacturer, Joseph Menge, No. 105 Tchoupitoulas street, New Orleans, La.

Reliability.—In answering advertisements every person should always be sure that they are dealing with a reliable firm. In sending away for goods you have to trust a great deal to the firm of whom you are buying. In buying buggies and harness our readers can never go wrong when they purchase of the Wilber H. Murray Mfg. Co., of Cincinnati, Ohio. They are well known throughout the United States. The celebrated $5.95 "Murray" harness and $55.95 "Murray" buggies are household words the country over. They guarantee every buggy and every set of harness that leaves their factory to be just as represented or money refunded. If you have not already received one of their fine catalogues you should write to them for it.

Delightful Resorts.—Our readers who are desirous of finding pleasant places to spend the summer should bear in mind that the Chicago & Northwestern railway furnishes every facility for a rapid, safe, and comfortable journey from Chicago to Waukesha, Madison, Lake Geneva, Neenah, Marquette, St. Paul, Minneapolis, Duluth, Ashland, Lake Minnetonka, Yellowstone National Park, and the mountain resorts of Colorado, and the far West. Fast vestibuled trains, equipped with reclining chair cars, parlor cars, palace sleeping and dining cars, afford patrons of the Northwestern every luxury incident to travel by a first-class railway. Excursion tickets at reduced rates and descriptive pamphlets can be obtained upon application to any ticket agent, or by addressing W. A. Thrall, General Passenger and Ticket Agent C. & N. W. R'y, Chicago, Ill.

Silk Culture in America.—The United States Department of Agriculture will no longer give silk culture its fostering care, owing to the failure of the 51st Congress to make an appropriation for the purpose. The department will distribute no more eggs and purchase no more cocoons. The work heretofore has been represented by the Department of Agriculture at Washington, the Kansas State Association, the California State Association, and the Woman's Silk Culture Association of the United States, Philadelphia. This last association has, since its organization, had upward of 60,000 correspondents; 12,000 pounds of cocoons have been purchased; 1700 pounds of reeled or commercial raw silk have been sold; 2000 yards of silk goods, forty silk United States flags, and large quantities of silk fringe and ribbons have been made, and 40,000 mulberry trees have been distributed.

Registry of Imported Southdown Sheep.—The

[*Continued on Page* 465.]

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[CONTINUED FROM PAGE 474]

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TABLE OF CONTENTS.

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CHAPTER III. Apple Juice.
CHAPTER IV. Apples, Varieties and Tests.
CHAPTER V. Apparatus for Cider Making.
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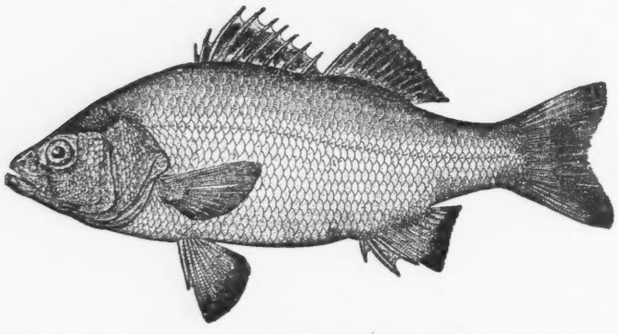

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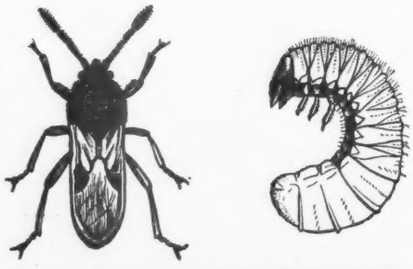

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Contents of This Number.

Achimenes.....*Illustrated*..441
Animal Ailments.....466
Artists, a Word to.....460
Apple Tree Aphis.....459
Beef Cattle, Fattening on Bluegrass(J. M. Osborn).....427
BOYS AND GIRLS:
Uncle Brad's Adventures (Sydney Dayre) *Illustrated*..451
Keep the Girls on the Farm (Julia Allyn).....452
Our Puzzle Contest.....*Illustrated*..453
A Barnyard Ghost (Annie C. Sage).....*Illustrated*..453
Buff Cochin (H. S. Babcock).....*Illustrated*..435
Buckwheat.....436
Bull, Ida of St. Lambert's (L. S. Hardin)....*Illustrated*..437
Cabbage, Why it Fails (F. Park).....442
Colleges, The, and Better Roads.....460
Cow, The Model (I. C. Wade).....438
Cows, Feeding for Beef (Andrew N. Merrill).....438
Clover, Japan.....428
Crop Prospects, Midsummer.....472
Cucumber Enemies, A Remedy for (Dr. A. G. Chase)...442
Farming in Foreign Lands.....456
Farm Plat, The.....437
Farmhouses, Cheerful (Fred. Grundy).....*Illustrated*..432
Farm Fork, An Improved (A. J. Pierce).....*Illustrated*..432
Farmer as a Citizen, The.....460
Farmer, The, and the Railroad.....459
Fertilizing, with Plow, Harrow, and Cultivator (D. Webb).....428
Fertilizer, Too Much.....430
Flower Beds, Ornamental.....441
FROM NEAR AND FAR:
Flowers of the Cape of Good Hope.....454
Florida versus Manitoba.....454
Persia, Its Agriculture.....454
Russia, Cotton Culture in.....454
Norway, From the West Coast (W. D. Krohn).....*Illustrated*..455
Land Cheaper than Fertilizers.....453
Gladiolus.....*Illustrated*..443
Hives, Sections and their Adjustment (W. Z. Hutchinson).....440
Hop Plant-Louse (Prof. C. V. Riley)....6 *Illustrations*..444
Horseshoeing, A Saving in.....436
HOUSEHOLD:
What Busy Housewives Should Read (Mary E. Folsom).....446
Saving Work (Waldo F. Brown).....446
Children, Ill-Mannered (Nellie Burns).....446
Flavor, Differences of (Dr. A. S. Heath).....446
Broom Case, Butterfly (Annie H. Donnell) *Illustrated*..447
Work-Table, A Stowaway.....*Illustrated*..447
Taste, A Man's (Jennie James).....447
Fruit Evaporator, Southern (L. D. Snook) *Illustrated*..447
Four Women Joint Economists (Gorham Silver).....448
A Boy and His Jack Jackknife (Webb Donnell).....*Illustrated*..448
Little Helps (Alice Chittenden).....448
Diamond Net Lace.....*Illustrated*..448
A Dainty Parlor (Ada B. Houston).....449
Our Piazza Boarder (Florence A. Merriam).....*Illustrated*..449
A Word in Season (Katharine B. Foot).....450
Outing Gowns.....450
Ice and Ice Cream.....450
Insect Pests, Many.....462
Kansas Idea, The.....462
Land, A Device for Measuring.....(*Illustrated*..432
Lame Horses, One Cause For (Hollister Sage).....428
Lathe, How to Make a Farmer's (W. H. Johnson).....3 *Illustrations*..433
Leopard Flower or Blackberry Lily.....*Illustrated*..441
Library Corner.....464
Lime, a Simple Test for.....428
Matters of Business.....472
Mule Breeding (Dr. A. S. Heath).....*Illustrated*..431
New York State Fair.....459
Nurserymen, American.....459
Pigs, Sweet Whey for (John Gould).....431
Plowing, Unprofitable (Webb Donnell).....434
Poultry Pickings (J. W. Caughey).....434
Poultry Droppings, How to Save.....*Illustrated*..436
Poultry Feeding Boxes.....*Illustrated*..476
Potatoes, Pointers with.....438
Poppies, Iceland, (G. A. Woolson).....442
Prices, Improved, Not a Sufficient Remedy.....462
Prunes Dropping.....459
Publications Acknowledged.....468
Radish Worms.....462
Ramie Prospects, (Charles H. Shinn).....*Illustrated*..427
Rice, The American Industry, Its Development and Prospects (Andrews Wilkinson).....*Frontispiece*..424
Sheep, A Neglected Race of.....*Illustrated*..429
Shipping Crate for Poultry.....*Illustrated*..436
Sorrel.....459
South, The Agriculture of (James K. Reeve).....430
Spraying Apple Trees.....459
Strawberries Next Season.....415
Sugar Beets in America.....440
Weeds, The Mission of.....442
West Indies, Market Gardening in the (Edgar Mayhew).....*Illustrated*..439
Wheel-Rims, Preserving.....*Illustrated*..433
White Lilies, Planting.....442
Winter Wheat, Top Dressing in the Spring.....433

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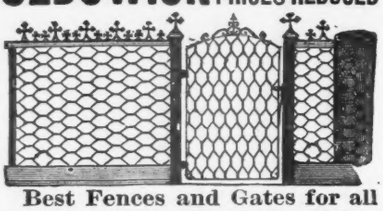

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